

No. 14-1490

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

FENF, LLC,

Plaintiff-Appellee,

v.

SMARTTHINGZ, INC.,

Defendant-Appellant.

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE
EASTERN DISTRICT OF MICHIGAN IN CASE NO. 2:12-CV-14770,
HONORABLE PATRICK J. DUGGAN

BRIEF FOR DEFENDANT-APPELLANT

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Dated: July 18, 2014

Certificate of Interest

Counsel for Appellant SmartThingz, Inc. certifies the following:

1. The full name of every party or amicus represented by me is:

SmartThingz, Inc.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

None.

3. All parent corporations and any publicly-held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

None.

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are:

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Dated: July 18, 2014

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TABLE OF ABBREVIATIONS

Parties

SmartThingz or
Appellant

FenF or
Appellee

Defined Terms

‘675 patent U.S. Pat. No. 8,002,675

‘357 patent U.S. Pat. No. 6,238,357

STATEMENT OF RELATED CASES

SmartThingz, Inc. is not aware of any case pending in this or any other court that will directly affect, or be directly affected by, this Court's decision in the pending appeal.

JURISDICTIONAL STATEMENT

On May 7, 2014, the United States District Court for the Eastern District of Michigan issued an appealable Judgment of liability in case number 2:12-cv-14770-PJD. This appeal, noticed on May 12, 2014, is timely. Fed. R. App. P. 4.

This Court has jurisdiction over this appeal pursuant to 28 U.S.C. § 1295(a)(1).

STATEMENT OF THE ISSUES

1. Whether the District Court erred by failing to construe the term “separators” in claim 35 of the ‘675 patent as being subject to its plain and ordinary meaning, something that separates, which is consistent with the specification and evidence of record, and by instead inserting an unsupported limitation of elasticity, specifically by construing “separators” to mean “posts formed of an elastic material [or a material with elastomeric properties] such that they have the ability to stretch and elongate vertically and expand outwardly”?
2. Whether the District Court abused its discretion in entering a permanent injunction against SmartThingz where FenF failed to prove and the District Court failed to even consider if a causal nexus between the alleged harm and the infringement exists?

STATEMENT OF THE CASE AND FACTS

I. PRELIMINARY STATEMENT

SmartThingz appeals the District Court’s claim construction. In construing the claim terms of the ‘675 patent, the District Court improperly amended the claims, rather than construing the disputed terms. Moreover, the District Court’s “construction” of the claim terms is contrary to the intrinsic record, and contrary to the District Court’s own assessment of the specification.

SmartThingz also appeals the District Court’s entry of a permanent injunction. FenF failed to prove, and the District Court failed to consider, whether a causal nexus exists between the alleged infringement and the alleged harm. In the absence of a showing by FenF of such a connection, and the District Court finding such a connection, entry of the permanent injunction was an abuse of discretion.

II. PROCEDURAL HISTORY

This appeal originates from a patent and trademark infringement filed by FenF against SmartThingz on October 26, 2012. (Add.1). FenF accused SmartThingz, *inter alia*, of infringing its U.S. Pat. No. 8,002,675 (“the ‘675 patent”) by selling certain toe stretchers. (Add.1-2). SmartThingz filed a motion seeking summary judgment that the ‘675 patent is invalid as anticipated under 35 U.S.C. § 102(b) by a prior art patent, U.S. Pat. No. 6,238,357 (“the ‘357 patent”).

(*Id.*). SmartThingz argued that the terms of claim 35 of the ‘675 patent, the only asserted claim, do not need to be construed and are subject to their plain and ordinary meaning. (*Id.*). In response to SmartThingz’s motion, FenF asserted that the claims did need to be construed. (Add.2-4).

On July 25, 2014, after holding a *Markman* hearing, the District Court issued an order construing certain terms of claim 35 of the ‘675 patent, adopting FenF’s proposed construction, and denying SmartThingz’s motion. (Add.15). In view of the District Court’s claim construction, SmartThingz stipulated to infringement of claim 35 of the ‘675 patent. (Add.20). Based in part on that stipulation, and after considering the parties’ positions, the District Court entered a permanent injunction on April 14, 2014. (Add.16-29). Thereafter, on May 7, 2014, the District Court entered judgment in FenF’s favor on liability. (Add.30).

SmartThingz timely appealed the injunction and the judgment on May 12, 2014 pursuant to Fed. R. App. P. 4.

III. STATEMENT OF FACTS

A. The Asserted Claim of the Patent-in-Suit

The patent-in-suit relates to an exercise tool. More precisely, the toe stretcher described and claimed in the patent-in-suit is “specifically devised as a foot-therapy and toe-aligning device to align, separate, and stretch toes.” (Add.31, abstract). The application that matured into ’675 patent was filed on October 31,

2007 and makes its earliest priority claim to application No. 10/687,354, which was filed on October 17, 2003. (Add.31).

FenF asserts that SmartThingz's sale of certain toe stretchers infringes claim 35 of the '675 patent. (Add.1-2). Claim 35 reads:

Claim 35. A foot-therapy and toe-aligning device, comprising:

a frame with four separators for separating a plurality of toes, wherein the frame comprises a top portion, a bottom portion, a front portion, and a back portion, with the separators connecting the top portion with the bottom portion;

wherein the separators, in combination with the top portion and the bottom portion, form three holes through the frame for insertion of a plurality of toes, wherein each hole includes an entrance into the back portion, an exit from the front portion, and surrounding walls connecting the entrance with the exit;

wherein the four separators include two outer separators and two inner separators, such that each of the two outer separators include an inner portion that forms a surrounding wall in a corresponding hole and an outer portion that does not operate as a surrounding wall to a hole; and

wherein at least one of the top portion and the bottom portion includes at least one elongated section that extends beyond the outer portion of at least one of the two outer separators.

(Add.63).

B. The Accused Product

FenF has accused SmartThingz's SmartToes product of infringement. An example of SmartToes is shown below:

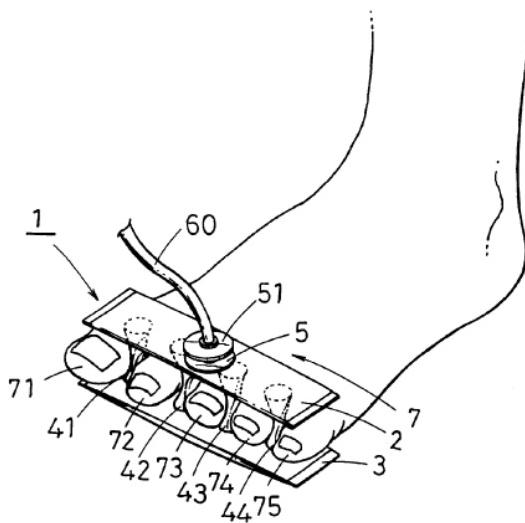


SmartThingz's SmartToes

C. The Prior Art

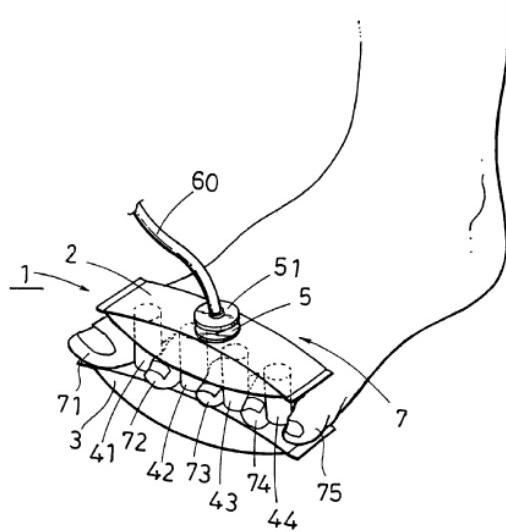
The '357 patent issued on May 29, 2001. A129. The '357 patent is also directed to a foot therapy device. *Id.*, abstract. The device described in the '357 patent can be used to stretch the toes, improve blood circulation, and/or widen the space between the toes. Appendix, p. 138, col. 1, lns. 50-65. Two examples of the device described in the '357 patent are shown below.

Fig. 3



Appendix, p. 132, '357 patent, Fig. 3

Fig. 4



Appendix, p. 133, '357 patent,

Fig. 4

D. The Disputed Claim Terms

In response to SmartThingz motion for summary judgment, FenF requested that the District Court construe two terms in claim 35: (1) “four separators for separating a plurality of toes”; and (2) “the separators connecting the top portion with the bottom portion”. (Add.3). SmartThingz believes these claim terms are subject to their plain and ordinary meaning. (Add.4). FenF proposed the following “constructions” for these terms, respectively: (1) “four separators each formed of an elastic material for separating a plurality of toes”; and (2) “the separators connecting the top portion with the bottom portion and having the ability to be elongated and released to conform to the shape of a user’s toes.” (*Id.*)

The District Court, in essence, adopted FenF's proposed "constructions".
(Add.15).

SUMMARY OF THE ARGUMENT

The District Court's claim construction must be reversed. The District Court improperly construed the claim term "separators" to mean "posts formed of an elastic material [or a material with elastomeric properties] such that they have the ability to stretch and elongate vertically and expand outwardly." This "construction" is actually an amendment to the claims, rather than a construction of the unambiguous claim language. Moreover, the District Court's construction of "separators" to mean "posts" conflates two terms that are explicitly differentiated by the patent specification and used in different claims to provide different claim scope. This erroneous construction must be reversed in favor of giving the term "separators" its plain and ordinary meaning.

The District Court also abused its discretion in entering a permanent injunction against SmartThingz. Entry of a permanent injunction requires a showing that there is a causal nexus between the alleged irreparable harm and the alleged infringement. The alleged harm cannot be mere competitive harm that results from factors other than the defendant's supposed appropriation of the patented features. Here, the District Court failed to consider whether such a causal

nexus exists. Moreover, the record is devoid of any evidence that would support finding a causal nexus.

STANDARD OF REVIEW

The Federal Circuit reviews a District Court's claim construction *de novo*. *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). The Federal Circuit reviews the decision to grant an injunction, as well as the scope of an injunction, for abuse of discretion. *Joy Technologies v. Flakt, Inc.*, 6 F.3d 770, 772 (Fed. Cir. 1993). Factual findings supporting the injunction are reviewed for clear error and the District Court's assessment of the *eBay* factors is reviewed for abuse of discretion. *Acumed LLC v. Stryker Corp.*, 551 F.3d 1323, 1327-31 (Fed. Cir. 2008).

ARGUMENT

I. THE DISTRICT COURT ERRED IN FAILING TO CONSTRUE THE TERM “SEPARATOR” WITH ITS PLAIN AND ORDINARY MEANING

The District Court's supposed “construction” of the term “separators” in claim 35 is not actually a construction at all. Rather, it is an improper amendment to the claim language. Further, the construction is contrary to the intrinsic record. As the District Court recognized in its claim construction order, the '675 patent differentiates between “separators” – portions of a toe stretcher that separate the toes – and “posts” – separators with specific additional properties, such as

elasticity. The District Court's construction, however, eliminates this critical distinction made by the patentee and explicitly highlighted in the specification by adopting a construction wherein "separators" and "posts" are the same.

A. FenF's Proffered "Construction" Improperly Invited the District Court to Amend, Not Construe, Claim 35 and the District Court Accepted

The District Court's "construction" of the '675 patent was no construction at all. Rather, the District Court, as FenF invited it to do, amended claim 35, adding limitations that the patentee did not.

FenF requested that the District Court construe two terms in claim 35: (1) "four separators for separating a plurality of toes"; and (2) "the separators connecting the top portion with the bottom portion". (Add.3). FenF's proposed "constructions" are, respectively: (1) "four separators each formed of an elastic material for separating a plurality of toes"; and (2) "the separators connecting the top portion with the bottom portion and having the ability to be elongated and released to conform to the shape of a user's toes." (Add.4) Thus, in the guise of "construing" the claims, FenF's proposal asked the District Court to keep all the same words already in the claims and add the additional language "**each formed of an elastic material**" to the first claim element and the additional language "**and having the ability to be elongated and released to conform to the shape of a**

“user’s toes” to the second claim element. Adding limitations to the middle of a patent claim is not claim construction – it is an impermissible claim amendment.

The District Court, in essence, adopted FenF’s proposed “constructions”. (Add.15). In construing “separators” to mean “posts formed of an elastic material [or a material with elastomeric properties] such that they have the ability to stretch and elongate vertically and expand outwardly,” the District Court noted that it did not find FenF to be improperly attempting to amend the claim, but that FenF’s proposed construction was consistent with the specification. (*Id.*).

The District Court’s amendment of the claims in the guise claim construction is improper and has been repeatedly rejected by the Federal Circuit. *Gart v. Logitech, Inc.*, 254 F.3d 1334, 1342-43 (Fed. Cir. 2001) (rejecting construction that “would improperly add a limitation...not appearing in the unambiguous language of the claim” where scope of claim is apparent from plain language); *Intervet Am., Inc. v. Kee-Vet Labs., Inc.*, 887 F.2d 1050, 1053, (Fed.Cir.1989) (“courts cannot alter what the patentee has chosen to claim as his invention”). “The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims.” *Embrex, Inc., v. Serv. Eng’g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000). Thus, FenF’s invitation to the District Court to alter the scope of the claims by adding a limitation related to elasticity or an ability to

stretch and elongate was improper and the District Court's adoption of that construction was error and must be reversed.

B. The District Court Correctly Differentiated Between “Separators” and “Posts,” but Improperly Construed the term “Separators” to Eliminate that Distinction

Not only was the District Court's construction of the term “separator” an improper claim amendment masquerading as claim construction, but the District Court's construction is contrary to the intrinsic evidence. The specification is, of course, of paramount importance in construing patent claims. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315-17 (Fed. Cir. 2005). Courts must not, however, overemphasize the importance of the specification. Specifically, “broad claims supported by the written description should not be limited in their interpretation to a preferred embodiment.” *Gart*, 254 F.3d at 1343 citing *Laitram Corp. v. Cambridge Wire Cloth Co.*, 863 F.2d 855, 865 (Fed. Cir. 1988) (preferred embodiments are not claim limitations). While courts must consult the specification in connection with claim construction, courts only do so to determine if the patentee has acted as his own lexicographer or when the claim language itself lacks sufficient clarity. *Id.* at 1341. When neither of those circumstances is present, courts “follow the general rule that terms in the claim are to be given their ordinary and accustomed meaning.” *Id.* “In short, a court must presume that the terms in the claim mean what they say, and, unless otherwise compelled, give full

effect to the ordinary and accustomed meaning of claim terms.” *Id.* (citing *Johnson Worldwide Assocs. v. Zebco Corp.*, 175 F.3d 985, 989 (Fed. Cir. 1999)).

Here, the patentee did not act as his own lexicographer with respect to the term “separators,” and the claim using that term is sufficiently clear. Moreover, nothing in the ‘675 patent specification supports the District Court’s constructions.

The ‘675 patent very clearly differentiates between “separators” and “posts”. A distinction that FenF disingenuously blurred in its briefing by using the term “posts/separators” throughout its briefs, as if they are the same. *See, e.g.,* A157. The District Court, despite initially recognizing the distinction between posts and separators, ultimately accepted FenF’s argument that they are the same. (Add.13 (“the ‘675 patent clearly equates the ‘posts’ as ‘separators’”)).

Contrary to District Court’s holding, however, the ‘675 patent specification does not equate posts and separators, and it certainly never uses the term “posts/separators,” which was invented by FenF’s attorneys. The ‘675 patent clearly differentiates between “posts” (elements in claims 1-34) and “separators” (which appear only in claim 35). In its “Description of Related Art,” the ‘675 patent describes prior art toe stretchers with “separators,” including the inventor’s own device and the so-called “Funatogawa2 invention”. (Add.54, ‘675 patent at Col. 1, ln. 60-Col. 2, ln. 15). The ‘675 patent then claims that “a need exists for an intended stretchable toe post.” (*Id.* at Col. 2, lns. 57-58). Indeed, the

specification describes in great detail the benefits of the novel post. Thus, while all “separators” separate the toes, it is only the inventor’s novel “posts” that add the additional feature of being elastic or stretchable. In fact, the District Court summed it up best, stating “as FenF’s counsel explained at the *Markman* hearing, all posts are separators but not all separators are posts.” (Add.13). The District Court (and FenF’s counsel) got this exactly right – not all separators are posts, *i.e.* the term “separators” as used in the ‘675 patent is broader than the term posts. As SmartThingz argued, the term “separators” is subject to its plain and ordinary meaning – something that separates. While, on the other hand, posts are separators with certain additional attributes.

Yet, somehow, the District Court went on to adopt a construction of “separators” that completely eviscerated this important distinction and construed “separators” to mean “*posts* formed of an elastic material [or a material with elastomeric properties] such that they have the ability to stretch and elongate vertically and expand outwardly.” (Add.15 (emphasis added)). In fact, every reference to the specification that the District Court relied on to support its construction related to the attributes or features of posts. (Add.10-12). None of these references (nor anything else in the specification) describes “separators” as being elastic. Thus, while the proper construction of the term “posts,” which is not at issue here, might include the attributes adopted by the District Court, it is not the

proper construction of the term “separator”. In view of the ‘675 patent’s explicit reference to its novel “posts” as differentiating the claimed device from the prior art “separators,” as well as the District Court’s correct observation that “all posts are separators but not all separators are posts,” the District Court’s construction is in error and must be reversed.

The distinction between “separators” and “posts” is further bolstered by the doctrine of claim differentiation. The doctrine of claim differentiation is based on “the common sense notion that different words...in separate claims are presumed to indicate that the claims have different meanings.” *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1369 (Fed. Cir. 2007) (quote/citation omitted). The terms “post” and “separator” are presumed to have different meanings. Overcoming this presumption requires evidence to the contrary from the intrinsic record. *Id.* Here, the specification supports that “posts” and “separators” are different in the ‘675 patent. What the specification shows is that the inventor, specifically differentiated between prior art “separators” and his novel “posts” when identifying “a need exists for an intended stretchable toe post.” (Add.54 at Col. 2, Ins. 57-58). Having done so, the inventor then made the purposeful decision to claim “posts” in each of claims 1-34, but claim the broader “separators” in claim 35. (Add.61-63).

Thus, as the law presumes and as supported by the intrinsic record, the ‘675 patent means different things when it uses the words “post” and “separator”. Whatever the merits of a proposed construction for “posts,” there is no basis to construe “separators” as the District Court did. The District Court’s construction is in error and the term “separators” should be given its plain and ordinary meaning.

II. THE DISTRICT COURT ABUSED ITS DISCRETION IN ENTERING A PERMANENT INJUNCTION BECAUSE FENF FAILED TO PROVE, AND THE DISTRICT COURT FAILED TO CONSIDER A CAUSAL NEXUS BETWEEN THE ALLEGED INFRINGEMENT AND THE ALLEGED HARM

A. The “Causal Nexus” Requirement

The Supreme Court’s decision in *eBay* made clear that a patentee is not entitled to injunctive relief as a matter of course. *eBay v. MercExchange, L.L.C.*, 547 U.S. 288, 291 (2006). Rather, a patentee must, as any other party, demonstrate that it is entitled to an injunction based on an analysis of the four traditional factors. *Robert Bosch, LLC v. Pylon Mfg. Corp.*, 659 F.3d 1142, 1149 (Fed. Cir. 2011).

To support entry of an injunction, a patentee must offer evidence to support its claim that, *inter alia*, it has been irreparably harmed by the alleged infringement. Doing so, however, is not enough. The patentee must go one step further and show, not that just that the harm has occurred, but also that there is a causal nexus between the infringement and the harm:

To show irreparable harm, it is necessary to show that the infringement caused harm in the first place. Sales lost to an infringing product cannot irreparably harm a patentee if consumers buy that product for reasons other than the patented feature. If the patented feature does not drive the demand for the product, sales would be lost even if the offending feature were absent from the accused product. Thus, a likelihood of irreparable harm cannot be shown if sales would be lost regardless of the infringing conduct.

Apple Inc. v. Samsung Elecs. Co., 735 F.3d 1352, 1360 (Fed. Cir. 2013) (“*Apple III*”) (quoting *Apple Inc. v. Samsung Elecs. Co.*, 678 F.3d 1314, 1324 (Fed. Cir. 2012) (“*Apple I*”)).

Similarly, in *Apple Inc. v. Samsung Elecs. Co.*, 695 F.3d 1370 (Fed. Cir. 2012) (“*Apple II*”):

[I]t may very well be that the accused product would sell almost as well without incorporating the patented feature. And in that case, even if the competitive injury that results from selling the accused device is substantial, the harm that flows from the alleged infringement (the only harm that should count) is not. Thus, the causal nexus inquiry is indeed part of the irreparable harm calculus: it informs whether the patentee’s allegations of irreparable harm are pertinent to the injunctive relief analysis, or whether the patentee seeks to leverage its patent for competitive gain beyond that which the inventive contribution and value of the patent warrant.

Apple III, 735 F.3d at 1360 (quoting *Apple II*, 695 F.3d at 1374-75).

In sum, as is the general rule in tort cases, there is a causation requirement and this requirement applies equally to requests for injunctive relief. *Id.*

B. FenF Failed to Proffer Any Evidence Supporting a Nexus Between the Alleged Harm and the Infringement and any Harm is a Consequence of Competition, not Infringement

The District Court record is devoid of any evidence that would prove that there is a causal connection between the alleged infringement and the alleged harm.

It is unequivocal that a patentee must make “a showing of some causal nexus between [the defendant’s] infringement and the alleged harm to [the patentee] as part of the showing of irreparable harm.” *Apple III*, 735 F.3d at 1360. There are many reasons that a customer might purchase one product instead of another. As District Court notes, SmartThingz’s product sells for less than FenF’s. (Add.24). Other reasons for customers buying the SmartThingz product instead of FenF’s could be personal preference, ranking in search results, or customer reviews. In short, it may simply be that SmartThingz is selling its product to its customers for reasons that are wholly unrelated to the features covered by FenF’s patent.

Additionally, there are factors outside of FenF’s and SmartThingz’s control that may have resulted in the alleged harm cited by FenF. For example, on Amazon.com, there are at least two other products for sale for significantly less than either FenF’s or SmartThingz’s products that do not infringe any of FenF’s patents. These products, Gel Flex Toe Stretchers and Pampered Toes, each sell for less than ten dollars. (See A357-68). Undoubtedly, these low price competitors

have an impact on FenF's business and result in some of the alleged harm that FenF would ascribe solely to SmartThingz. Here, FenF did not produce any evidence tying the supposed harm to the alleged infringement. (*See* A230-309). In the absence of any evidence demonstrating a causal nexus between the infringement and the harm, the District Court abused its discretion by entering a permanent injunction.

C. The District Court Failed to Consider whether a Causal Nexus Between the Alleged Infringement and the Alleged Harm Exists

There is no doubt that the record is devoid of any evidence tying the alleged infringement to the alleged harm. Notwithstanding the dearth of evidence, in entering a permanent injunction, the District Court failed to even consider whether there a causal nexus between the harm alleged by FenF and the alleged infringement exists. The District Court's entire analysis focuses on the nature of the supposed irreparable harm suffered by FenF. (Add.22-25). The District Court's failure to even consider whether such a nexus exists is an abuse of discretion, and the injunction must be overturned.

CONCLUSION

Because the District Court construed the claim term "separators" to improperly amend claim 35 of the '675 patent and because the District Court's construction conflicts with the intrinsic evidence, the construction must be

overturned. Moreover, because the District Court abused its discretion in entering a permanent injunction, the injunction must be overturned as well.

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

This brief complies with the type-volume limitation of Federal Rules of Appellate Procedure, Rule 32(a)(7)(B) because the brief contains 3,854 words, excluding parts of the brief exempted by Federal Rules of Appellate Procedure, Rule 32(a)(7)(B)(iii) and Federal Circuit Rule 32(b).

This brief complies with the typeface requirements of Federal Rules of Appellate Procedure, Rule 32(a)(5) and the type style requirements of Federal Rule of Appellate Procedure, Rule 32(a)(6), because the brief has been prepared in a proportionally-spaced typeface using Microsoft Word in 14-point Times New Roman type style.

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on this July 18, 2014, caused a copy of the foregoing BRIEF OF APPELANT to be filed electronically with the Clerk of Court for the United States Court of appeals for the Federal Circuit by using the appellate CM/ECF system and, thereby, served on the following parties by electronic CM/ECF:

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ADDENDUM

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UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

FENF, LLC,

Plaintiff,

v.

Case No. 12-cv-14770
Honorable Patrick J. Duggan

SMARTTHINGZ, INC.,

Defendant.

/

**OPINION AND ORDER ON CLAIM CONSTRUCTION AND DENYING
DEFENDANT'S MOTION FOR SUMMARY JUDGMENT ON
INVALIDITY**

On October 26, 2012, FenF, LLC ("FenF") filed this lawsuit against Smartthingz, Inc. ("Smartthingz") alleging patent and trademark infringement. Specifically, FenF contends that Smartthingz is infringing FenF's patent, U.S. Pat. No. 800,002,675 ("the '675 patent"). FenF also accuses Smartthingz of unfair competition, false designation of origin, false representation, and false advertising. On March 7, 2013, Smartthingz filed a motion for summary judgment of invalidity. In the motion, Smartthingz argues that claim 35 of the '675 patent is anticipated by prior art and therefore is invalid under 35 U.S.C. § 102(b). The motion has been fully briefed. After reviewing the motion, the Court concluded that a *Markman*¹

¹See *Markman v. Westview Instr., Inc.*, 52 F.3d 067 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370, 116 S. Ct. 1384 (1996).

hearing was needed to construe certain terms in the claim. The Court therefore held a *Markman* hearing on June 6, 2013. At the hearing, counsel for Smartthingz conceded that the motion for summary judgment of invalidity must be denied if this Court adopts FenF's construction of claim 35.

I. Background

The patent-in-suit relates to a toe stretcher, described and claimed in the patent as "specifically devised as a foot-therapy and toe-aligning device to align, separate, and stretch toes." (the '675 patent, abstract.) Essentially it is a device where the toes of the foot are inserted and separated by posts comprised of a material that renders the posts adjustable to make insertion easy for a variety of toe sizes and shapes and expandable to then stretch the toes. (*See id.*) The application for the patent was filed on October 31, 2007, and makes its earliest priority claim to October 17, 2003.

In its motion for summary judgment, Smartthingz contends that claim 35 of the patent-in-suit is anticipated by an earlier patent for a toe stretching device, U.S. Pat. No. 6,238,357 ("the '357 patent"). In making this argument, Smartthingz focuses on two examples of the device described in the '357 patent that are represented in Figures 3 and 4 of the patent. (*See Mot. Ex. B.*) Smartthingz argues that the language of claim 35 is indisputable and the claim terms do not need to be

construed because they are all subject to their plain and ordinary meaning.

In response, FenF argues that two terms within claim 35 require construction and that until this occurs, Smartthingz' summary judgment motion is premature. FenF essentially maintains that Smartthingz' construction of claim 35 is too simplistic and ignores intrinsic evidence in the '675 patent that must be considered. When that intrinsic evidence is considered, FenF argues, a construction different than that proposed by Smartthingz is suggested.

Claim 35 of the '675 patent reads:

35. A foot-therapy and toe-aligning device, comprising:
a frame with four separators for separating a plurality of toes,
wherein the frame comprises a top portion, a bottom portion, a front portion, and a back portion, with the separators connecting the top portion with the bottom portion;
wherein the separators, in combination with the top portion and the bottom portion, form three holes through the frame for insertion of a plurality of toes, wherein each hole includes an entrance into the back portion, an exit from the front portion, and surrounding walls connecting the entrance with the exit;
wherein the four separators include two outer separators and two inner separators, such that each of the two outer separators include an inner portion that forms a surrounding wall in a corresponding hole and an outer portion that does not operate as a surrounding wall to a hole; and
wherein at least one of the top portion and the bottom portion includes at least one elongated section that extends beyond the outer portion of at least one of the two outer separators.

(the '675 patent, Col. 19, ll.7- Col. 20 ll.13 (emphasis added).) FenF argues that

the phrases underlined above require construction.

According to FenF, the first phrase should be construed as “four separators each formed of an elastic material for separating a plurality of toes”; and the second phrase should be construed as “the separators connecting the top portion with the bottom portion and having the ability to be elongated and released to conform to the shape of a user’s toes.” (Pl.’s Resp. Br. at 8.) Smartthingz contends that FenF’s construction is an improper claim amendment. As indicated earlier, Smartthingz believes the terms are subject to their plain and ordinary meaning. This means, Smartthingz contends, that the claim terms are not limited in the manner FenF describes (i.e., as “formed of an elastic material” or “having the ability to be elongated and released to conform to the shape of a user’s toes.”)

II. Legal Standard

A. Invalidity

Pursuant to 35 U.S.C. § 102(b), a patent is invalid if *inter alia* “the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States.” 35 U.S.C. § 102(b) (2012) (amended effective Mar. 13, 2013). A patent is presumed valid. 35 U.S.C. § 282. The party asserting invalidity therefore bears the burden of proof and the applicable standard

is clear and convincing evidence. *Eli Lilly & Co. v Barr Labs., Inc.*, 251 F.3d 955, 962 (Fed. Cir. 2001).

“[I]nvalidity by anticipation requires that the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation.” *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000) (citations omitted).

Accordingly, the first step of an anticipation analysis is proper construction of the patent’s claims. *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1294 (Fed. Cir. 2002); *see also Power Mosfet Techs., LLC v. Siemens AG*, 378 F.3d 1396, 1406 (Fed. Cir. 2004) (“Whether a patent is invalid as anticipated is . . . a two-step inquiry . . . the first step requires construing the claim . . .”). Only once this is done should the patent claim be compared against the prior art to determine whether the claim is anticipated. *Power Mosfet*, 378 F.3d at 1406 (“The second step in the analysis requires a comparison of the properly construed claim to the prior art . . .”); *see also Helifix Ltd. v. Blok-Lok Ltd.*, 208 F.3d 1339, 1346 (Fed. Cir. 2000). Claim construction is a question of law; whereas the comparison of the claim and the prior art are questions of fact. *Power Mosfet*, 378 F.3d at 1406; *see also Helifix*, 208 F.3d at 1346; *Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991,

995 (Fed. Cir. 2006).

B. Construction

The Court of Appeals for the Federal Circuit's *en banc* decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (2005), provides a thorough synthesis of claim construction doctrine. According to the *Phillips* court, "the words of a claim 'are generally given their ordinary and customary meaning.'" *Id.* at 1312-13 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "... [T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application."

Id.

The *Phillips* court emphasized the importance of looking at the entire patent in construing claims because "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* at 1313. Thus, the ordinary meaning of a claim term cannot be looked at in a vacuum. *Id.* (citing *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005)). The ordinary meaning must be viewed in the context of the patent specification and prosecution history. *Id.* (citing *Multiform*

Desiccants, Inc. v. Medzam, Ltd., 133 F.3d 1473, 1477 (Fed. Cir. 1998)). The court may also consider “extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art” which “consists of all evidence external to the patent history, including expert and inventor testimony, dictionaries, and learned treatises.” *Id.* at 1314, 1316 (internal quotation marks and citation omitted).

The Federal Circuit has emphasized the importance of the specification in claim construction:

The claims, of course, do not stand alone. Rather, they are part of a “fully integrated written instrument” *Markman*, 52 F.3d at 978, consisting principally of a specification that concludes with the claims. For that reason, claims “must be read in view of the specification, of which they are part.” *Id.* at 979. As we stated in *Vitronics*, the specification “is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” 90 F.3d at 1582.

Phillips, 415 F.3d at 1315. “[C]laims must be construed so as to be consistent with the specification, of which they are a part.” *Merck & Co. v. Teva Pharms. U.S.A., Inc.*, 347 F.3d 1367, 1371 (Fed. Cir. 2003). The *Phillips* court restated the Circuit’s prior summary of this general principle:

“Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most

naturally aligns with the patent's description of the invention will be, in the end, the correct construction.”

415 F.3d at 1316 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)). The specification may reveal a special definition that the inventor has given to a claim term that differs from the meaning it would otherwise possess and, in that instance, the special definition must govern. *Id.* (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)).

As indicated earlier, the patent’s prosecution history also should be considered, if it is in evidence. *Id.* at 1317 (citing *Markman*, 52 F.3d at 980; *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 33, 86 S. Ct. 684 (1966)). “Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent.” *Id.* (citation omitted).

Courts are authorized to rely on extrinsic evidence; however, the Federal Circuit has warned that “it is ‘less significant than the intrinsic record in determining the legally operative meaning of claim language.’” *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004)) (additional quotation marks and citations omitted). In *Phillips*, the court clarified the role of extrinsic evidence in claim construction, explaining that

it should not be elevated above the meaning of the terms of the claim derived from the patent, itself. *Id.* at 1320-23. Thus a court should not determine the ordinary meaning or meanings of the claim term[s] in dispute based on extrinsic evidence, such as a dictionary, and then consult the specification to determine whether it excludes one of the meanings derived from the dictionary or limits the scope of that meaning. *Id.* at 1320. Instead, the court must first start with the specification as it “is ‘the single best guide to the meaning of a disputed term,’ and . . . ‘acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication.’” *Id.* at 1321 (quoting *Vitronics*, 90 F.3d at 1582). “Properly viewed, the ‘ordinary meaning’ of a claim term is its meaning to the ordinary artisan after reading the entire patent.” *Id.*

In its final statement concerning the significant role of the specification in claim construction, the *Phillips* court pointed out “that the purposes of the specification are to teach and enable those of skill in the art to make and use the invention and to provide a best mode for doing so.” *Id.* at 1323 (citing *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533 (Fed. Cir. 1987)). As such, the court emphasized that the specification likely will have the following value to the claim construction process:

One of the best ways to teach a person of ordinary skill in the

art how to make and use the invention is to provide an example of how to practice the invention in a particular case. Much of the time, upon reading the specification in that context, it will become clear whether the patentee is setting out specific examples of the invention to accomplish those goals, or whether the patentee instead intends for the claims and the embodiments in the specification to be strictly coextensive. . . . The manner in which the patentee uses a term within the specification and claims usually will make the distinction apparent.

Id. (citations omitted).

III. Analysis

Applying the above guidelines to the ‘675 patent, the Court concludes that FenF’s construction of claim 35 is the correct one.

Considered in a vacuum, the terms of claim 35 could be construed simply in accordance with their plain and ordinary meanings as proposed by Smartthingz. The full instrument, however, reflects that “separators” referred to in the claim means posts formed of an elastic material that thereby have the ability to stretch and elongate vertically and expand outwardly.

The abstract of the ‘675 patent describes the important effects of the posts being comprised of an elastic material:

The device is formed of an elastic material such that a user may place at least one of the plurality of posts between a user’s toes and pull the post to stretch and elongate the post between the toes. Upon release, the elastic material of the post causes the post to attempt to return to its original shape, thereby causing it to expand out and

conform its shape to fit snugly against the user's toes. Additionally, the elastic material allows the toe posts to be positioned and maintained at numerous locations between the user's toes for customizable positioning between the toes.

(the '675 patent, abstract.) The specification of the '675 patent explains that the improvements of the device on the prior art are premised on the use of an elastic material to form the posts:

The toe separator in the Funatogawa2 invention appears to be formed of a die-cut foam and does not produce or teach a calculated balance of elastomeric properties and design shapes . . .

* * *

Additionally, foam does not elongate sufficiently to allow a user to stretch the toe post or frame. Thus, a need exists for an intended stretchable toe post (and/or frame) because in stretching, the toe post becomes thinner in diameter and is thereby more easily placed between the user's toes. Upon release, a stretched toe post would contract in length and expand circumferentially to conform tightly to and effectively hold the user's toes, thereby remaining in the desired position. When released, the post would expand outwardly to increase pressure against the toes and thereby hold the device in the desired position. Equally significant, the posts would contract along a lengthwise axis to impart a lengthwise axis compressive holding force on the surface of the toe as well, also holding the device in the desired position. . . .

(*Id.* Col. 2 ll.16-19, ll.56- Col. 3 ll.2.) The detailed description of the invention further specifies the device as being comprised of “[a] plurality of posts formed of an elastic material . . .” (*Id.* Col. 7 ll.49-50; *see also* Col. 16 ll.31, 36 (“a plurality of posts formed of an elastic material” and “the posts have elastic properties”); Col.

17 ll.3 (same).) The detailed description further emphasizes that the benefits provided from the present invention are derived specifically from the toe posts being “formed of an elastomeric polymer that has sufficient elastomeric properties.” (*Id.* Col. 8 ll.45-47; *see also* Col. 8 ll.35-36 (“the elastomeric material of the toe posts *of the present invention* provides a benefit that allows . . .”)(emphasis added) .) The description goes on to identify the benefits derived from the posts being formed of such material in comparison to the prior art. (*See, e.g., id.* Col 8 ll.5-39.) It is clear that the patentee when describing the posts as formed of an elastic material in the specification is not simply “setting out specific examples of the invention to accomplish [the defined] goals” but instead “intends for the claims and the embodiments in the specification to be strictly coextensive.” *Phillips, supra.*

The prosecution history also reflects that the patent examiner reviewed the ‘357 patent as prior art when examining the application for the ‘675 patent. (the ‘675 patent at 2.) That the PTO issued the ‘675 patent after specifically considering this prior art is further evidence this Court must consider. *See Fromson v. Advance Offset Plate, Inc.*, 755 F.2d 1549, 1555 (Fed. Cir. 1985) (“The Examiner’s decision, on an original or reissue application, is never binding on a court. It is, however, evidence the court must consider in determining whether the

party asserting invalidity has met its statutory burden by clear and convincing evidence.”).

Smarthingz argues in reply that FenF’s construction is not a proper interpretation of claim 35 as written, but is an improper attempt to amend the claim. Smarthingz cites the following cases where the court rejected a patentee’s attempt to amend its claim by adding language not appearing in the claim language: *Gart v. Logitech, Inc.*, 254 F.3d 1334 (Fed. Cir. 2001); *Intervet Am., Inc. v. Kee-Vet Labs., Inc.*, 887 F.2d 1050 (Fed. Cir. 1989); and, *Henrob Ltd. v. Bollhoff Systemtechnick GmbH & Co.*, No. 05-cv-73214, 2006 WL 6142850 (E.D. Mich. Oct. 25, 2006) (unpublished opinion). Smarthingz also points out that claim 35 uses the term “separators”, whereas the references in the ‘675 patent to an elastic material are in relation only to “posts.”

First, the ‘675 patent clearly equates the “posts” as “separators.” They are not two different aspects of the device. The patent describes the posts as the mechanism that separates the toes and as a particular formulation of a separator (i.e., one made from an elastic material). In other words, as FenF’s counsel explained at the *Markman* hearing, all posts are separators but not all separators are posts.

Second, unlike the cases cited by Smarthingz, the references to an elastic

material in the ‘675 patent are not simply described limitations or preferred embodiments or statements made by the inventor during the prosecution history. Instead, the references to posts formed of an elastic material describe “the present invention” or “this invention”, explain that it is the only embodiment, and distinguish the invention from the prior art. Simply, a device comprised of separators “formed of an elastic material” is the only invention the ‘675 patent covers. When the written description clearly limits the meaning of a claim term to one different than its ordinary meaning, courts have construed the claim with the limitation. *See, e.g., Netcraft Corp. v. ebay, Inc.*, 549 F.3d 1394, 1397 (Fed. Cir. 2008) (concluding that “[w]hile the lay meaning of ‘communications link’ standing alone may be broader than ‘internet access’ . . . when considering the claim terms in light of the entire patent . . .” it is limited to “internet access.”); *Honeywell Int’l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1318-19 (Fed. Cir. 2006) (construing the term “fuel injection system component” to mean only a fuel filter, despite the broader, ordinary meaning which “refers to any constituent part of the fuel injection system of a motor vehicle including, for example, fuel filters, fuel lines, and connectors.”); *O.I. Corp. v. Tekmar Co.*, 115 F.3d 1576, (Fed. Cir. 1997) (concluding that “one skilled in the art reading the claims, description, and prosecution history would conclude that the term ‘passage’ in [the] claim . . . does

not encompass a smooth-walled, completely cylindrical structure.”).

As such, the Court does not find that FenF is attempting to improperly amend claim 35 by proposing that “separators” be construed as posts formed of an elastic material or a material with elastomeric properties. Rather that is the construction provided for by the ‘675 patent as a whole.

IV. Conclusion

In summary, when read in the context of the entire ‘675 patent, as this Court must, the term “separators” in claim 35 refers to a specific category of separators. That is, posts formed of an elastic material [or a material with elastomeric properties] such that they have the ability to stretch and elongate vertically and expand outwardly. As Smarthingz concedes, when claim 35 is construed in this manner, its motion for summary judgment of invalidity must be denied.

SO ORDERED.

Dated: July 25, 2013

s/PATRICK J. DUGGAN
UNITED STATES DISTRICT JUDGE

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UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
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FENF, LLC,

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Case No. 12-cv-14770
Honorable Patrick J. Duggan

SMARTTHINGZ, INC.,

Defendant.

PERMANENT INJUNCTION ORDER

In an Opinion and Order issued on this date, the Court granted Plaintiff FenF, LLC's motion for a permanent injunction pursuant to 35 U.S.C. § 283. In accordance with that decision, Defendant SmartThingz, Inc. ("SmartThingz"), its officers, agents, servants, employees, and others who are in active participation with it, are **PERMANENTLY ENJOINED** from continuing to infringe claim 35 of U.S. Patent No. 8,002,675 and from making, using, offering for sale, or selling throughout the United States or importing into the United States SmartThingz's SmartToes product as well as any other current or future products that embody technology protected by claim 35 of U.S. Patent No. 8,002,675 for as long as the patent remains in force.

SO ORDERED.

Dated: April 14, 2014

s/PATRICK J. DUGGAN
UNITED STATES DISTRICT JUDGE

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UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
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FENF, LLC,

Plaintiff,

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Case No. 12-cv-14770
Honorable Patrick J. Duggan

SMARTTHINGZ, INC.,

Defendant.

OPINION AND ORDER GRANTING PLAINTIFF'S (1) MOTION FOR RECONSIDERATION AND (2) MOTION FOR PERMANENT INJUNCTION

This matter presently is before the Court on a motion for reconsideration filed by Plaintiff FenF, LLC (“FenF”) pursuant to Eastern District of Michigan Local Rule 7.1 on April 1, 2014. In the motion, FenF seeks reconsideration of this Court’s March 28, 2014 opinion and order which *inter alia* denied without prejudice FenF’s motion for an injunction permanently enjoining Defendant SmartThingz, Inc. (“SmartThingz”) from infringing FenF’s patent, U.S. Pat. No. 800,002,675 (“the ‘675 patent”). On April 3, 2014, this Court issued a notice informing the parties that it was permitting SmartThingz to file a response to the motion for reconsideration if it wished to do so. SmartThingz filed a response on April 7, 2014.

Applicable Standard

Local Rule 7.1 provides that a motion for reconsideration will be granted only if the moving party “demonstrate[s] a palpable defect by which the court and the parties . . . have been misled” and “that correcting the defect will result in a different disposition of the case.” E.D. Mich. LR 7.1(h)(3). A motion that merely presents the same issues already ruled upon by the court, either expressly or by reasonable implication, shall not be granted. *Id.* On the other hand, a court need not consider issues raised for the first time in a motion for reconsideration that could and should have been raised previously, as such motions are “aimed at reconsideration, not initial consideration.” *Wardle v. Lexington-Fayette Urban County Gov’t*, 45 F. App’x 505, 511 (6th Cir. 2002) (internal quotation marks and citations omitted). Similarly, motions for reconsideration “cannot . . . be employed as a vehicle to introduce new evidence that could have been adduced during the pendency [of the motion on which the court ruled].” *Mktg. Displays, Inc. v. TrafFix Devices, Inc.*, 971 F. Supp. 262, 281 (E.D. Mich. 1997) (citing *Publishers Res., Inc. v. Walker-Davis Publ’ns, Inc.*, 762 F.2d 557, 561 (7th Cir. 1985) (emphasis in original removed)); *see also Sault Ste. Marie Tribe v. Engler*, 146 F.3d 367, 374 (6th Cir. 1998) (explaining that motions under Fed. R. Civ. P. 59(e) “are aimed at *re* consideration, not initial consideration”) (citing *FDIC v. World*

Universal Inc., 978 F.2d 10, 16 (1st Cir.1992)).

Analysis of FenF's Motion for Reconsideration

FenF filed a motion on December 16, 2013, seeking an injunction permanently enjoining SmartThingz from infringing the '675 patent. The Court denied the motion without prejudice in its March 28, 2014 decision because, as of that date, FenF had not demonstrated its success on the merits of its patent infringement claim against SmartThingz. Nor had the parties submitted to the Court a stipulation or any other writing reflecting a lack of dispute with respect to FenF's patent infringement claim. As this Court stated, "[a] court may issue a permanent injunction . . . only once the requesting party has demonstrated its success on the merits." (ECF No. 46 at 6, citing *Amoco Prod. Co. v. Vill. of Gambell, AK*, 480 U.S. 531, 546 n.12, 107 S. Ct. 1396, 1404 n.12 (1987).)

FenF attaches to its motion for reconsideration an e-mail message from SmartThingz's counsel to FenF's counsel, dated March 31, 2014, giving FenF's counsel permission to "represent to the Court that the parties stipulate that to [sic] judgment of infringement in FenF's favor under the court's claim construction." (ECF No. 47 Ex. A.) In its response to FenF's motion for reconsideration, SmartThingz also writes: "FenF's motion accurately reflects the parties' agreement and stipulation that, under the Court's claim construction, SmartThingz's accused

products infringe the asserted claim of the patent-in-suit.” (ECF No. 49.)

Technically, this newly submitted but previously available evidence should not entitle FenF to a different disposition of its motion for a permanent injunction.¹ The Court appreciates, however, that denying FenF’s motion for reconsideration on this basis only will delay its inevitable need to consider whether to grant FenF’s motion for a permanent injunction. As such, the Court will proceed to now consider the traditional factors relevant to deciding whether to grant FenF’s request for injunctive relief.

Whether to Grant FenF’s Request for a Permanent Injunction

FenF seeks a permanent injunction under the Patent Act, 35 U.S.C. § 283, enjoining Smartthingz from continuing to infringe the ’675 patent. As set forth in this Court’s previous decision, a permanent injunction may issue only after the plaintiff has prevailed on the merits of its claim and established that equitable relief

¹In its motion for reconsideration, FenF suggests that the Court should have concluded that FenF prevailed on its patent infringement claim based on representations made by SmartThingz’s counsel at an August 21, 2013 scheduling conference. (ECF No. 47 at 2-3.) As the parties are aware, however, the scheduling conference was not on the record and statements made at such a meeting do not become part of the case record automatically. When a party wants a statement and/or agreement to be part of the case record, that party generally must submit something to the Court in writing or file something on the docket. When the submission is intended to reflect an agreement between the parties, it should be stipulated to and signed by the other side.

is appropriate. (ECF No. 46 at 6.) Four factors are relevant to a court’s determination of whether equitable relief is appropriate: (1) whether the plaintiff will suffer irreparable injury absent an injunction; (2) whether remedies available at law, such as monetary damages, are adequate to compensate the plaintiff for its injury; (3) whether the balance of the hardships between the plaintiff and defendant warrant a remedy in equity; and (4) whether the public interest would be served or disserved by a permanent injunction. *eBay, Inc. v. MercExchange, LLC*, 547 U.S. 388, 391, 126 S. Ct. 1837, 1839 (2006) (citations omitted). The decision whether to grant injunctive relief falls within the district court’s discretion. *Id.*

Prior to the Supreme Court’s decision in *eBay*, courts followed the “general rule” that a permanent injunction should issue “against patent infringement absent exceptional circumstances.” *Id.* (internal quotation marks and citation omitted). This was based on a presumption of irreparable harm where the patent holder has demonstrated patent infringement. *See id.* In *eBay*, however, the Supreme Court rejected this presumption and held that the court’s discretion whether to issue an injunction in a patent case “must be exercised consistent with traditional principles of equity.” *Id.* at 394, 126 S. Ct. at 1841.

Irreparable Harm

The Federal Circuit has noted that while *eBay* rejects the “general rule that

an injunction normally will issue when a patent is found to have been valid and infringed, it does not swing the pendulum in the opposite direction.” *Robert Bosch LLC v. Pylon Mfg. Corp.*, 659 F.3d 1142, 1149 (2011). The court explained:

In other words, even though a successful patent infringement plaintiff can not longer rely on presumptions or other short-cuts to support a request for a permanent injunction, it does not follow that courts should entirely ignore the fundamental nature of patents as property rights granting the owner the right to exclude.

Id.

This right as a general rule is not ignored and is enforced traditionally where the parties are in direct competition. *See, id.* at 1150 (indicating that the issuance of a permanent injunction “is particularly apt in traditional cases . . . where the patentee and adjudged infringer both practice the patented technology.”); *see also Douglas Dynamics, LLC v. Buyers Prods. Co.*, 717 F.3d 1336, 1345 (Fed. Cir. 2013) (“Where two companies are in competition against one another, the patentee suffers the harm— often irreparable— of being forced to compete against products that incorporate and infringe its own patented inventions.”). SmartThingz contended in response to FenF’s motion for a permanent injunction that FenF does not practice the patented invention. (ECF No. 41 at Pg ID 543-44.) This Court disagrees however, for the reasons addressed in FenF’s reply brief. (ECF No. 42 at Pg ID 600-02.)

Further supporting a finding of irreparable harm resulting from SmartThingz's infringement is the fact that SmartThingz sells its infringing product for substantially less than FenF sells its YogaToes product, using many of the same channels of commerce. (ECF No. 33 ¶ 5; ECF No. 34 Ex. B at 53, 77.) Without an injunction, SmartThingz and other imitators can continue to flood these channels with infringing products that appear identical to FenF's patented products. Imitators have a significant advantage because they did not incur costs in developing the patent, yet are able to reap the significant benefits of patent ownership. Lack of development costs will allow them to offer the infringing product at a lower price, thus eroding the price of the product, potentially driving FenF out of the market.

Additionally, FenF has made a business decision to try and retain market exclusivity for products covered by the '675 patent and thus to not license its use to anyone. (ECF No. 33 ¶ 8.) SmartThingz's infringement diminishes FenF's ability to exclude others from practicing its patent despite its decision to retain market exclusivity. *See Presidio Components, Inc. v. Am. Technical Ceramics Corp.*, 702 F.3d 1351, 1363 (Fed. Cir. 2012) ("The district court correctly found Presidio's unwillingness to license favored finding irreparable injury."). Finally, FenF presents evidence that raises concerns regarding SmartThingz's ability to satisfy a

judgment, or at least FenF’s ability to trace SmartThingz’s earnings to collect on a judgment. In response to the motion, SmartThingz has not responded to FenF’s allegations or concerns. This further supports a finding of irreparable harm. *See Robert Bosch LLC*, 659 F.3d at 1154-55.

For the above reasons, the Court finds proof that FenF will be irreparably harmed absent an injunction.

Adequate Remedy at Law

SmartThingz asserted in response to FenF’s motion for an injunction that “[t]he issue of irreparable harm and adequacy of a remedy at law are very closely related.” (ECF No. 41 at Pg ID 547, citing *Acumed LLC v. Stryker Corp.*, 551 F.3d 1323, 1327-28 (Fed. Cir. 2008).) As SmartThingz indicates, “[t]his is logical because a harm that can adequately be remed[ied] by money damages is, by definition, not ‘irreparable’ and vice versa.” (*Id.*) The Court agrees and therefore finds that this second factor also favors the issuance of an injunction.

Balance of Hardships

FenF argued in its motion for an injunction that the balance of hardships weighs in favor of granting its request for a permanent injunction. FenF pointed out that the YogaToes product that is being challenged in the marketplace by SmartThingz’s “cheaper, imported, and infringing product” is FenF’s main

product. (ECF No. 32 at Pg ID 398; ECF No. 33 ¶ 6.) FenF argues that SmartThingz offers other products for sale from which it can derive revenue if it is ordered to stop selling the infringing product. FenF also points out that “SmartThingz knew of FenF’s Yoga Toes product before developing its own SmartToes product, and chose to ignore the risk that SmartToes might embody patented technology.” (ECF No. 32 at Pg ID 398, citing ECF No. 34 Ex. A at 21-22, Ex. B at 23-24, 172.)

SmartThingz countered that it will suffer greater harm as a result of an injunction because it “is a small company, with only two employees, a relatively narrow product line, and a business that has been, at times, struggling.” (ECF No. 41 at Pg ID 547.) SmartThingz argued that courts have declined to issue injunctions where doing so may well put the defendant out of business. (*Id.*, citing *Sundance, Inc. v. Demonte Fabricating Ltd.*, No. 02-73543, 2007 WL 37742, at *2 (E.D. Mich. Jan. 4. 2007).)

Interestingly, however, Judge Cohn changed his decision in *Sundance* and while initially denying the plaintiff’s request for permanent injunctive relief, *id.*, subsequently entered a permanent injunction. *Sundance*, No. 02-73543, 2007 WL 3053662 (E.D. Mich. Oct. 19, 2007). In any event, the size of SmartThingz’s workforce and product line does not weigh in favor of the Court granting or

denying FenF's motion. More significant to the Court is the fact that SmartThingz was aware of FenF's YogaToes product when it developed its own SmartToes. *See Robert Bosch LLC*, 659 F.3d at 1156 (citing *Windsurfing Int'l, Inc. v. AMF, Inc.*, 782 F.2d 995, 1003 n.12 (Fed. Cir. 1996) ("One who elects to build a business on a product found to infringe cannot be heard to complain if an injunction against continuing infringement destroys the business so elected.")).

As such, the Court concludes that the "balance of hardships" factor also indicates that equitable relief is appropriate.

Public Interest

With respect to this last factor, a plaintiff must show that "the public interest would not be disserved by a permanent injunction." *eBay*, 547 U.S. at 391, 126 S. Ct. at 1839. The public has a "general interest in the judicial protection of property rights in inventive technology . . ." *Douglas Dynamics, LLC*, 717 F.3d at 1346; *see also Sanofi-Synthelabo v. Apotex, Inc.*, 470 F.3d 1368, 1383-84 (Fed. Cir. 2006). Thus the question is whether this interest is outweighed by some other public interest.

FenF contended that "[t]here is no overriding public interest that would be disserved or frustrated by granting FenF's request for a permanent injunction. The public's health and safety is not implicated. The only consequence to the public

would be the unavailability of Smart[T]hingz's cheaper, imported, infringing products" (ECF No. 32 at Pg ID 399.) As FenF pointed out, however, this interest is not paramount to the public's interest in protecting patent rights. *See Sanofi-Synthelabo*, 470 F.3d at 1383-84 (finding that "the significant public interest in encouraging investment in drug development and protecting the exclusionary rights conveyed in valid pharmaceutical patents" outweighs the public's interest in the reduced cost of a generic, infringing drug) (internal quotation marks and citation omitted).

In response to FenF's argument, SmartThingz referred generically to the harm of an injunction to third parties, including its employees and customers. (*See* ECF No. 41 at Pg ID 547.) The only harm to SmartThingz's customers apparent to this Court, however, is the availability of a cheaper product. The significance of that interest is addressed in the preceding paragraph. As to the potential harm to SmartThingz's employees, the Court notes that there are only two: SmartThingz's principals who knew about FenF's product when they created the infringing product. Thus the Court believes that those individuals took the risk that an injunction might issue.

The Court therefore concludes that this last factor also favors equitable relief.

Conclusion

In light of the information now submitted reflecting SmartThingz's concession that it is liable to FenF for patent infringement based on the Court's claim construction, the Court finds that FenF has prevailed on its patent infringement claim. Applying the factors relevant to deciding whether equitable relief is warranted in response to that infringement, the Court concludes that it is.

Accordingly,

IT IS ORDERED, that Plaintiff FenF, LLC's Motion for Reconsideration is **GRANTED** and its request for a permanent injunction is **GRANTED**. The Court will issue a separate order entering a permanent injunction.

Dated: April 14, 2014

s/PATRICK J. DUGGAN
UNITED STATES DISTRICT JUDGE

Copies to:

Guy T. Conti, Esq.
Michael J. Druzinski, Esq.
Richard W. Hoffman, Esq.
Joel L. Dion, Esq.
Todd A. Holleman, Esq.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION – DETROIT

FENF, LLC,)	Civil Action No. 2:12-cv-14770-PJD
)	
Plaintiff,)	Honorable Patrick J. Duggan
)	
SMARTTHINGZ, INC.,)	
)	
Defendant.)	
)	

JUDGMENT

This Court has bifurcated damages, including a determination of whether FenF is entitled to damages on its trademark claim, leaving the issues of willfulness, the infringer's profits (if any), as well as the patentee's damages undecided at this time. In accordance with the Stipulations of the Parties that under the claim construction given in the Order of July 25, 2013 (Doc. #27): (1) Defendant SmartThingz's SmartToes product infringes claim 35 of United States Patent No. 8,002,675 (the "'675 patent"); (2) the '675 patent is not invalid; and (3) the Defendant SmartThingz has infringed Plaintiff FenF's United States Trademark Registrations Nos. 3,253,636 and 3,430,215 and for the reasons stated in the Opinion and Order of July 25, 2013 (Doc. #27), the Opinion and Order of March 28, 2014 (Doc. #46), the Opinion and Order of April 14, 2014 (Doc. #50) and Permanent Injunction issued April 14, 2014 (Doc. #51):

IT IS HEREBY ORDERED AND ADJUDGED that Judgment be and is hereby entered in favor of Plaintiff FenF and against Defendant SmartThingz.

This Judgment is final except for an accounting.

s/Patrick J. Duggan
Patrick J. Duggan
United States District Judge

Dated: May 7, 2014

I hereby certify that a copy of the foregoing document was served upon counsel of record on May 7, 2014, by electronic and/or ordinary mail.

s/Marilyn Orem
Case Manager

US008002675B2

(12) **United States Patent**
Ferri(10) **Patent No.:** US 8,002,675 B2
(45) **Date of Patent:** *Aug. 23, 2011(54) **FOOT-THERAPY AND TOE-ALIGNING DEVICE**(75) Inventor: **Frederic Ferri**, Ann Arbor, MI (US)(73) Assignee: **FenF, LLC**, Ann Arbor, MI (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **11/982,390**(22) Filed: **Oct. 31, 2007**(65) **Prior Publication Data**

US 2008/0113854 A1 May 15, 2008

Related U.S. Application Data

(60) Continuation-in-part of application No. 11/541,067, filed on Sep. 28, 2006, now Pat. No. 7,322,915, which is a division of application No. 10/687,354, filed on Oct. 17, 2003, now Pat. No. 7,131,939.

(51) **Int. Cl.**
A63B 23/08 (2006.01)(52) **U.S. Cl.** **482/79; 482/148**(58) **Field of Classification Search** **482/148; 482/79-80, 47; 30/26; D21/685; D28/56-61; 15/167.3; 132/75.6**

See application file for complete search history.

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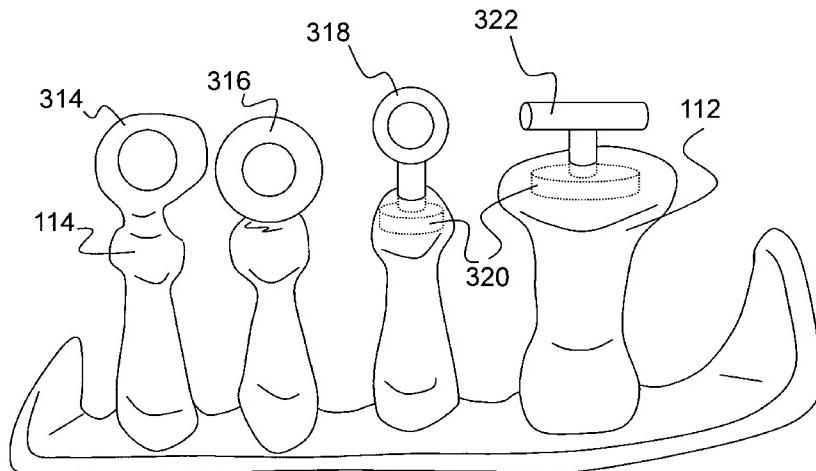
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Primary Examiner — Lori Baker(74) *Attorney, Agent, or Firm* — Tope-McKay & Associates;
Marcus Risso

(57)

ABSTRACT

Described is an exercise tool. More particularly, it is a therapy and exercise tool specifically devised as a foot-therapy and toe-aligning device to align, separate, and stretch toes. The foot-therapy and toe-aligning device comprises a frame with a plurality of posts connected with the frame. The device is formed of an elastic material such that a user may place at least one of the plurality of posts between a user's toes and pull the post to stretch and elongate the post between the toes. Upon release, the elastic material of the post causes the post to attempt to return to its original shape, thereby causing it to expand out and conform its shape to fit snugly against the user's toes. Additionally, the elastic material allows the toe posts to be positioned and maintained at numerous locations between the user's toes for customizable positioning between the toes.

35 Claims, 21 Drawing Sheets

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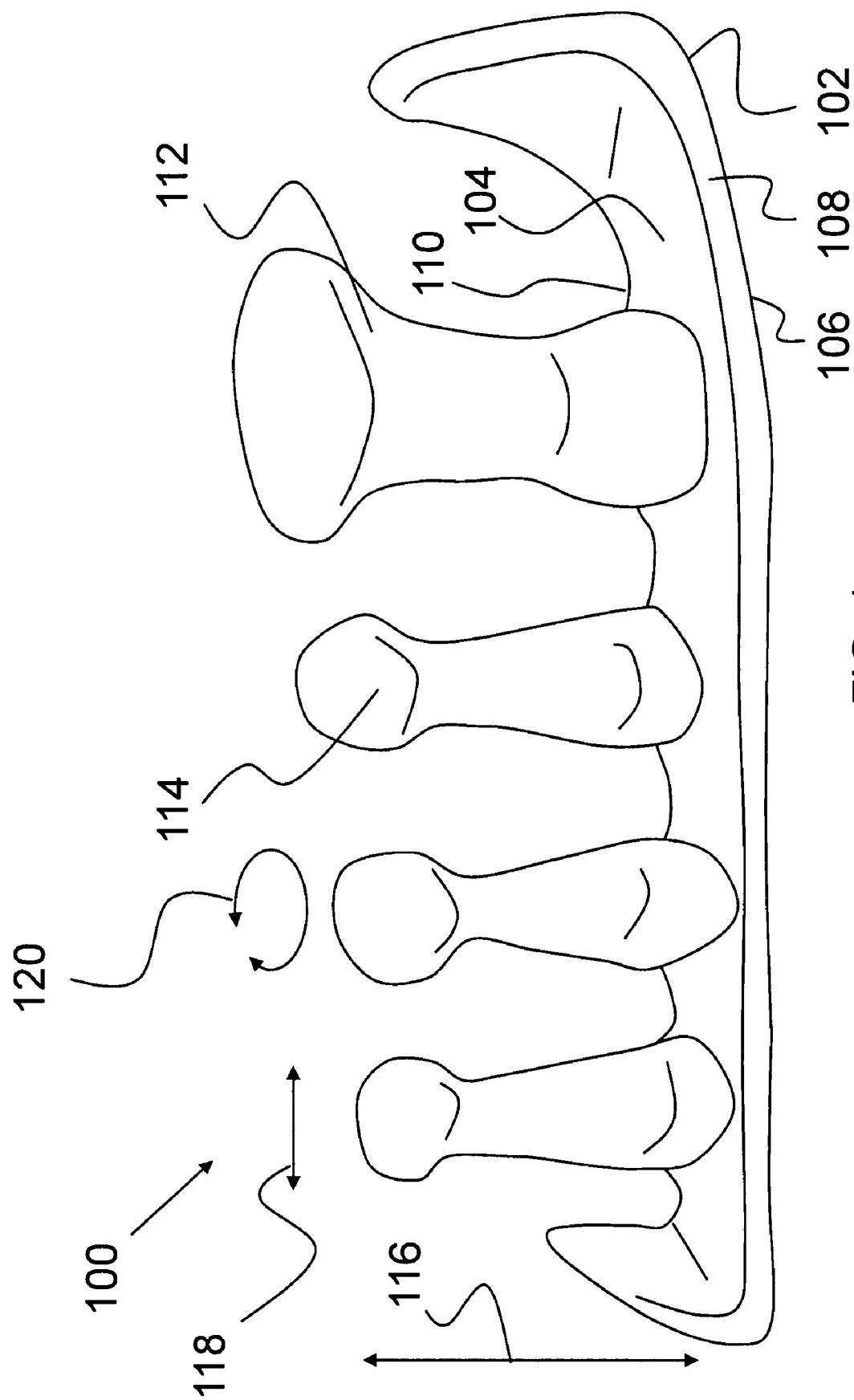
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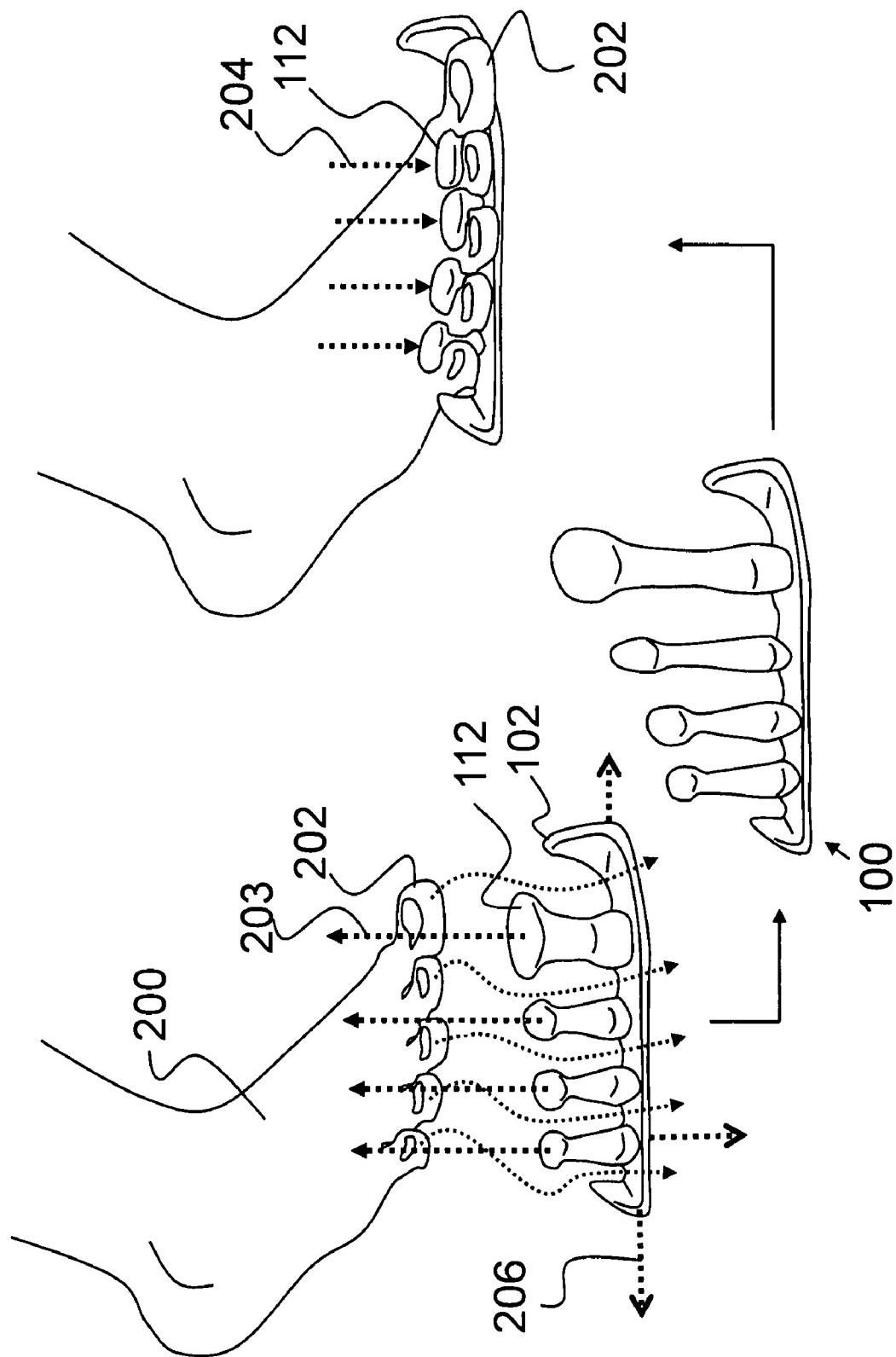


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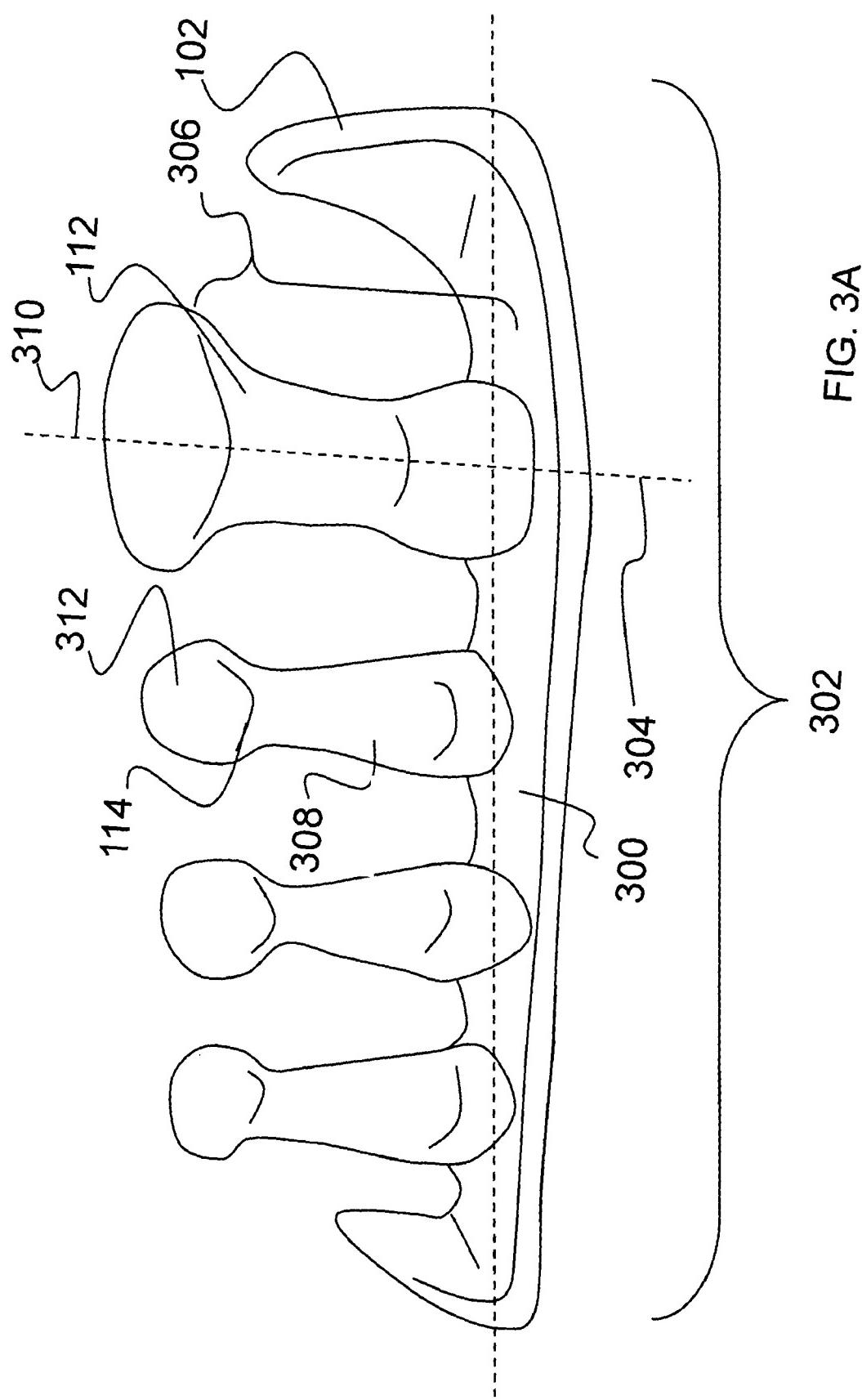


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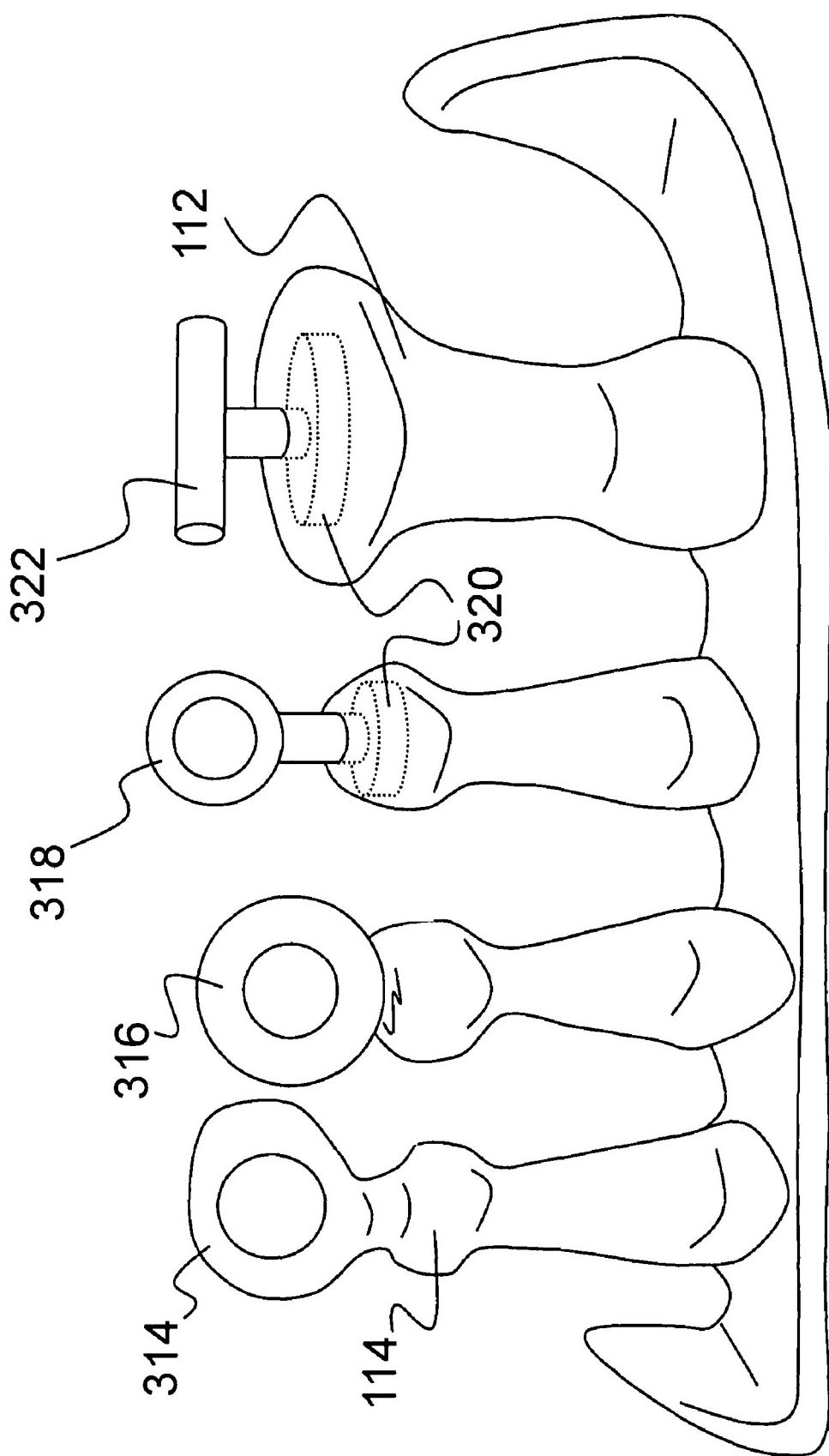


FIG. 3B

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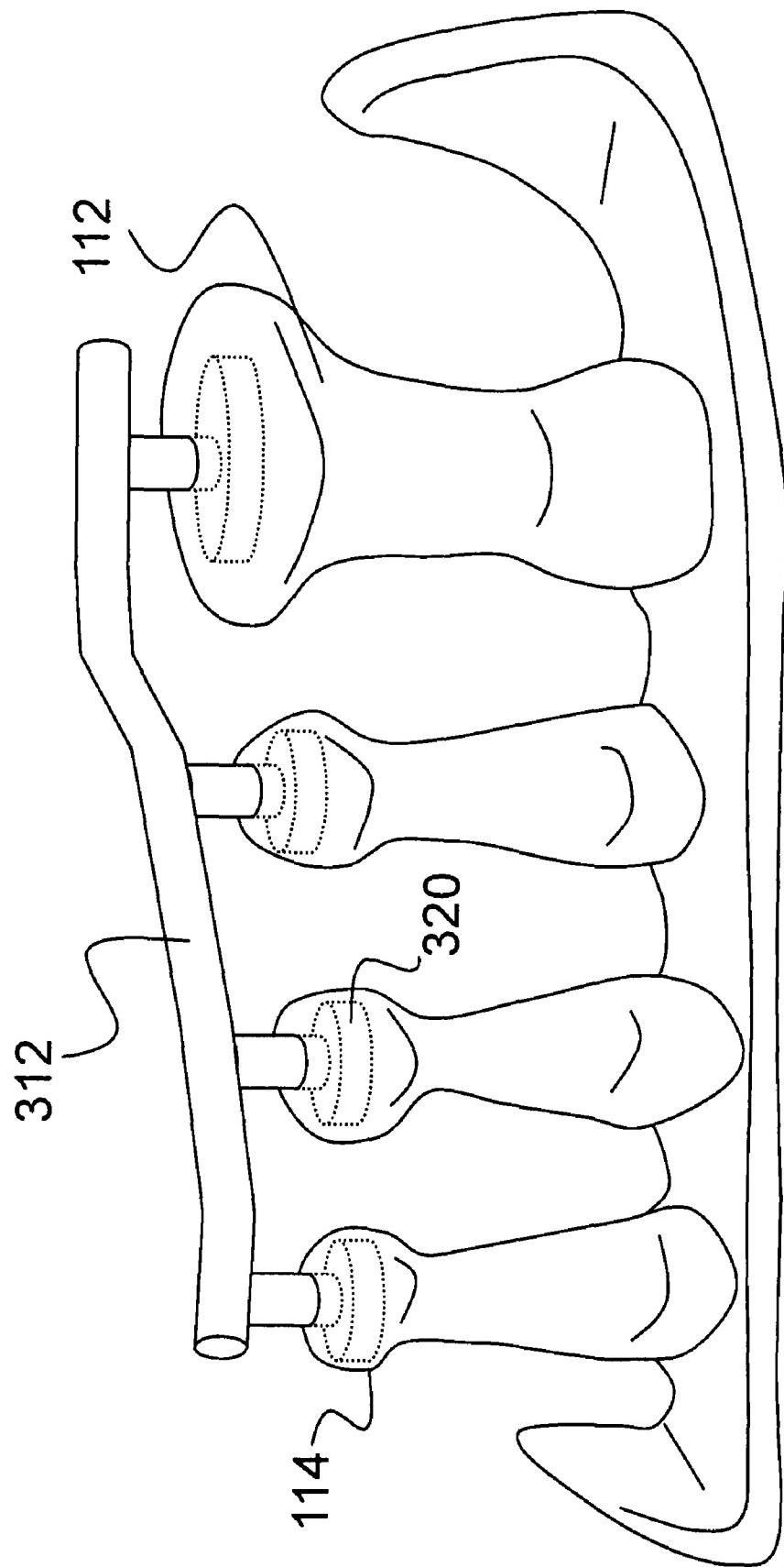


FIG. 3C

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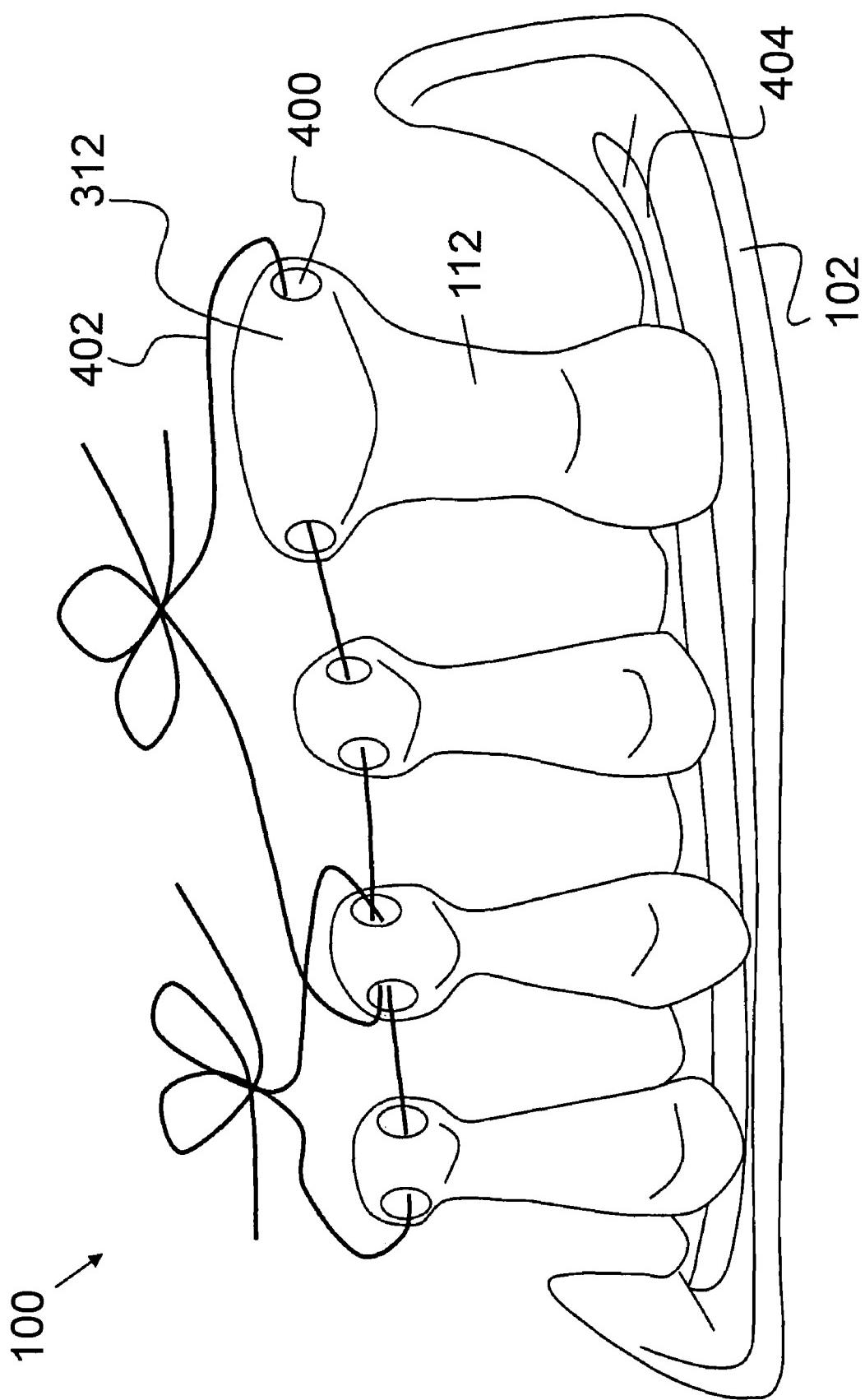


FIG. 4

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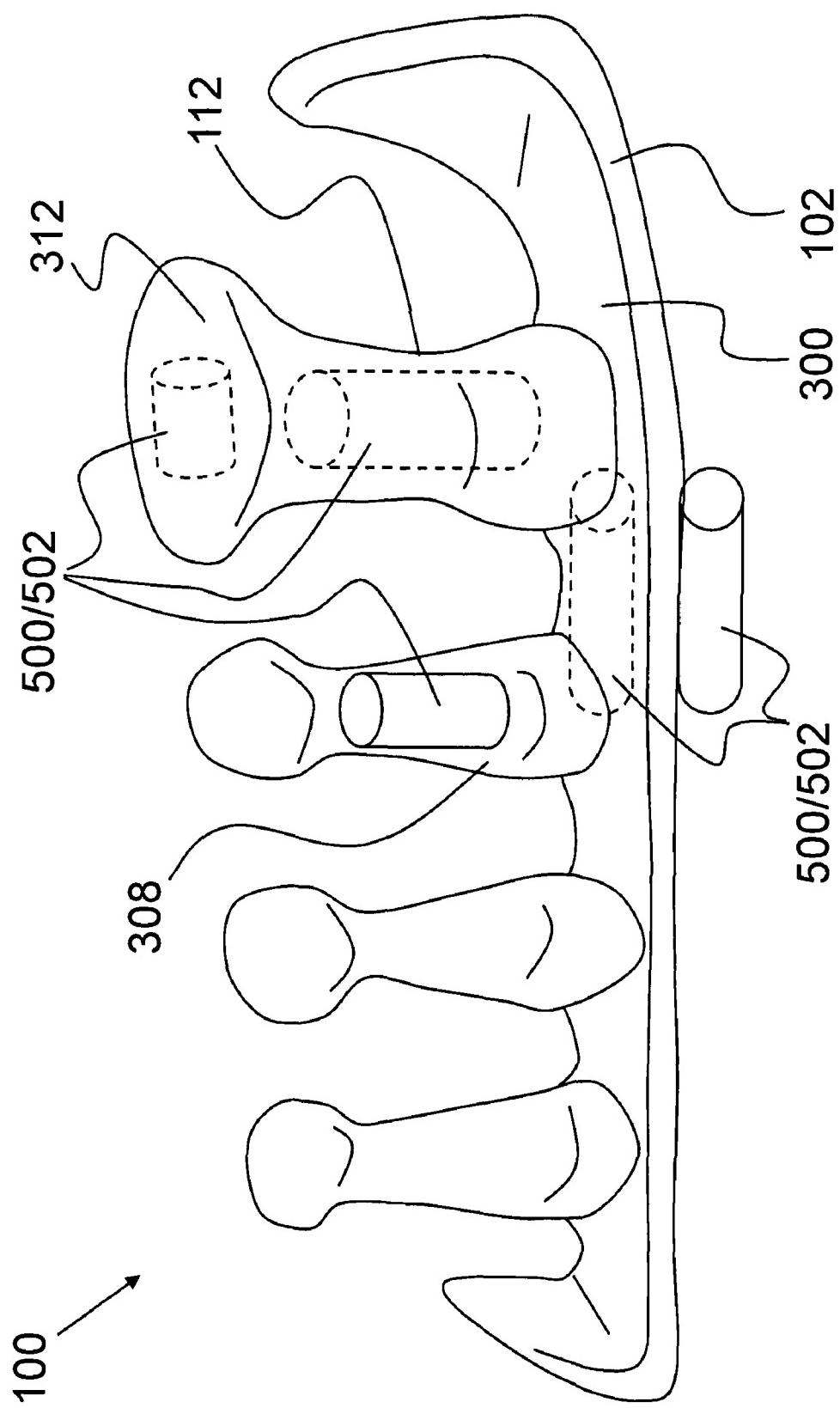


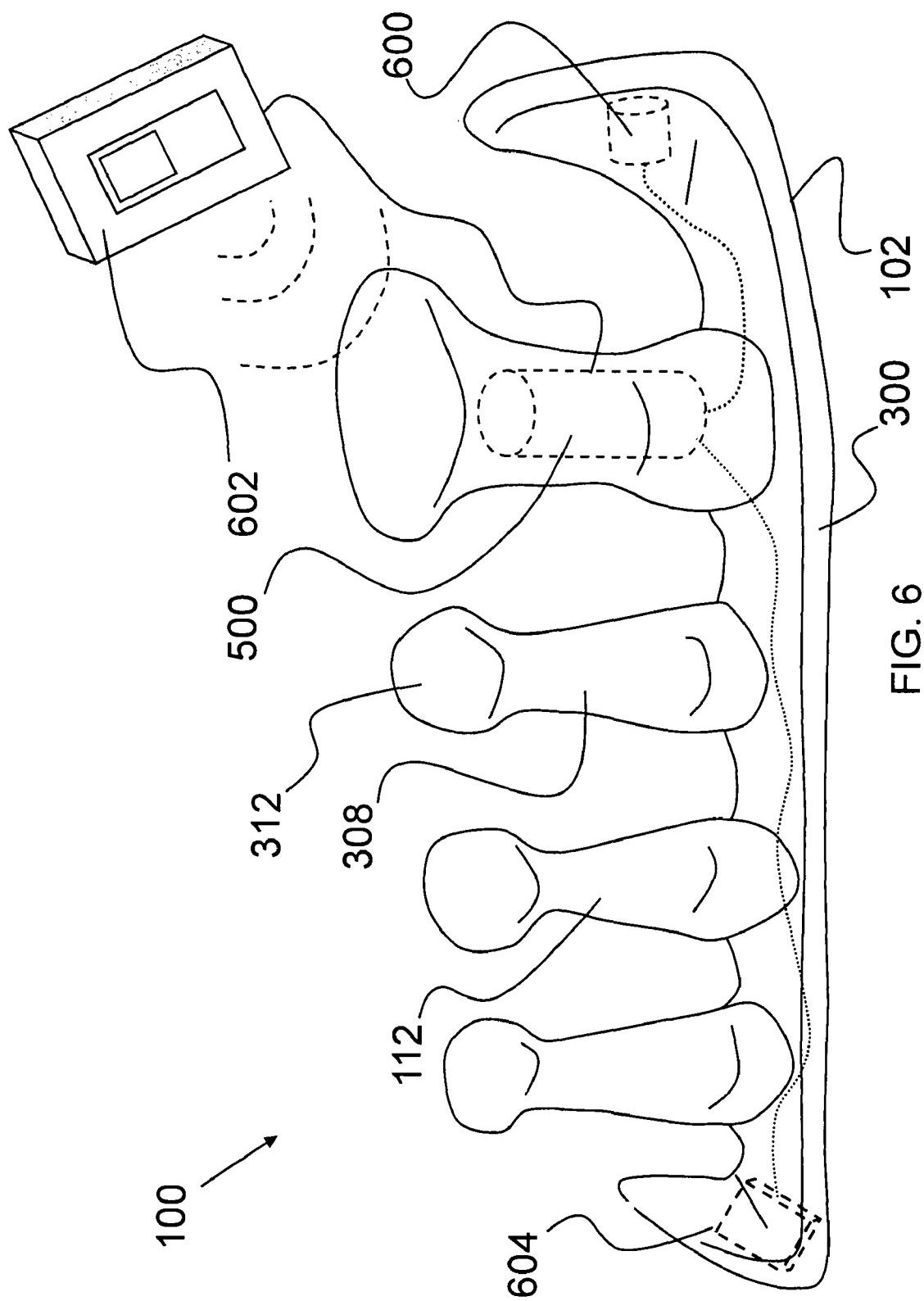
FIG. 5

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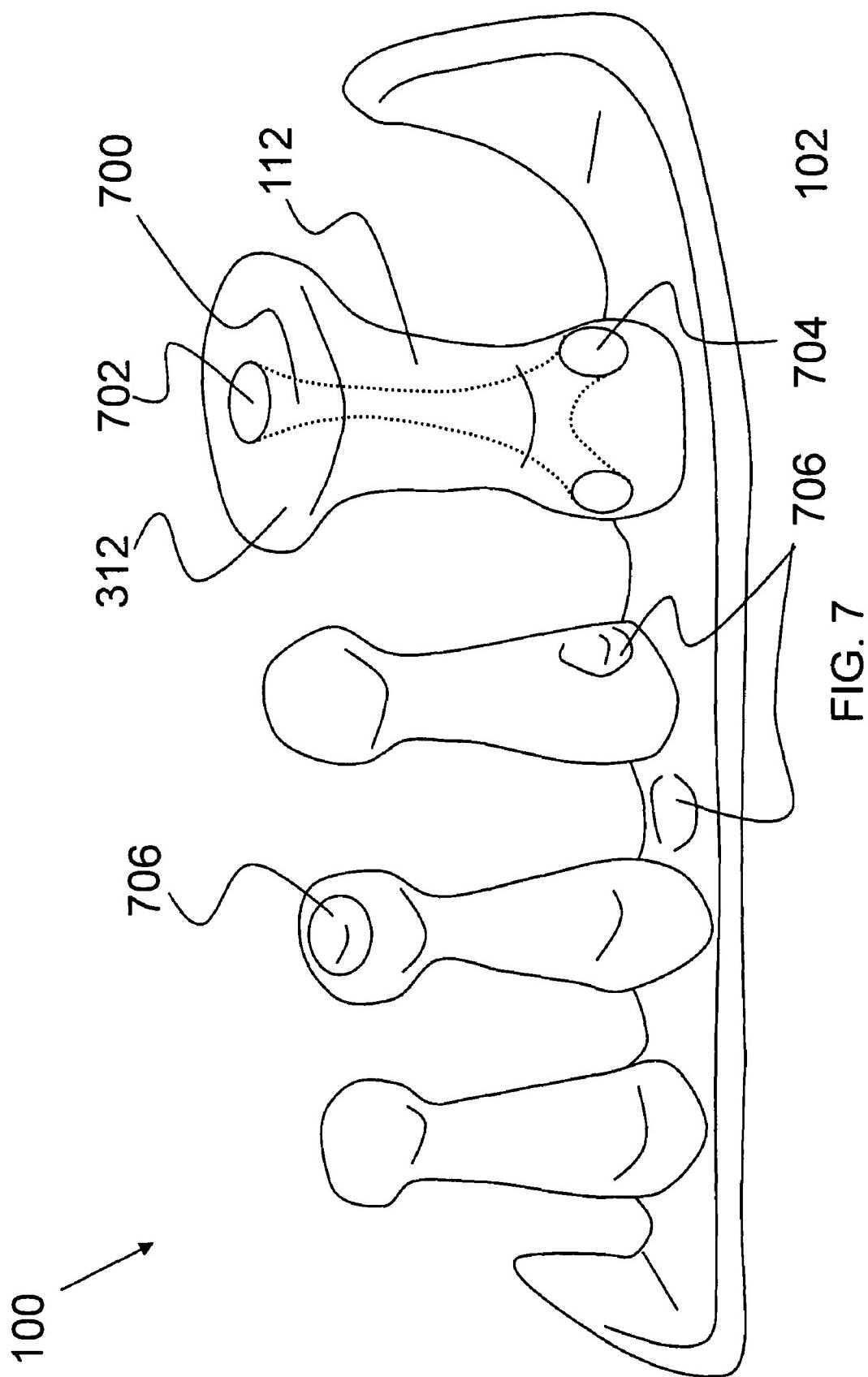


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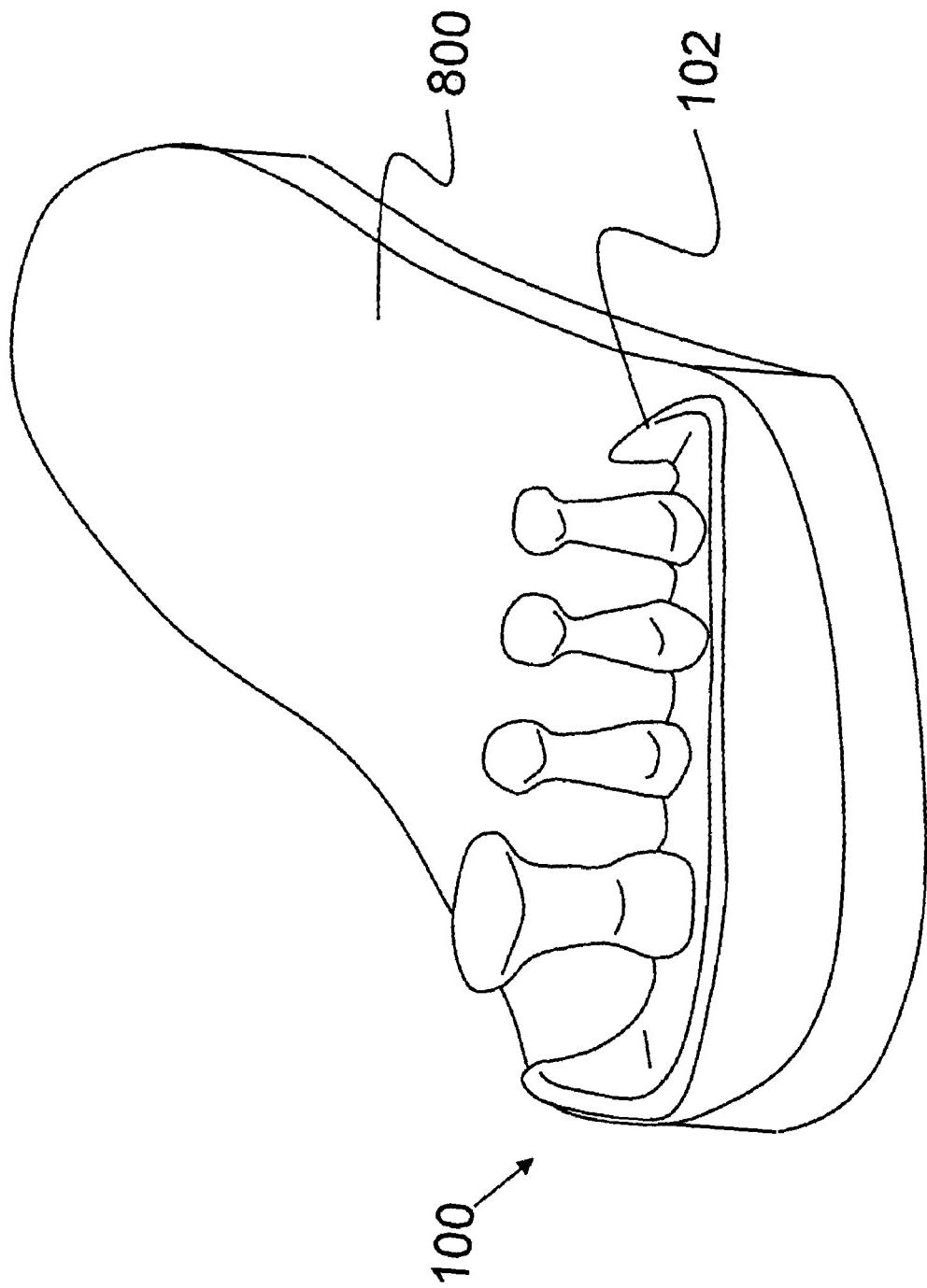


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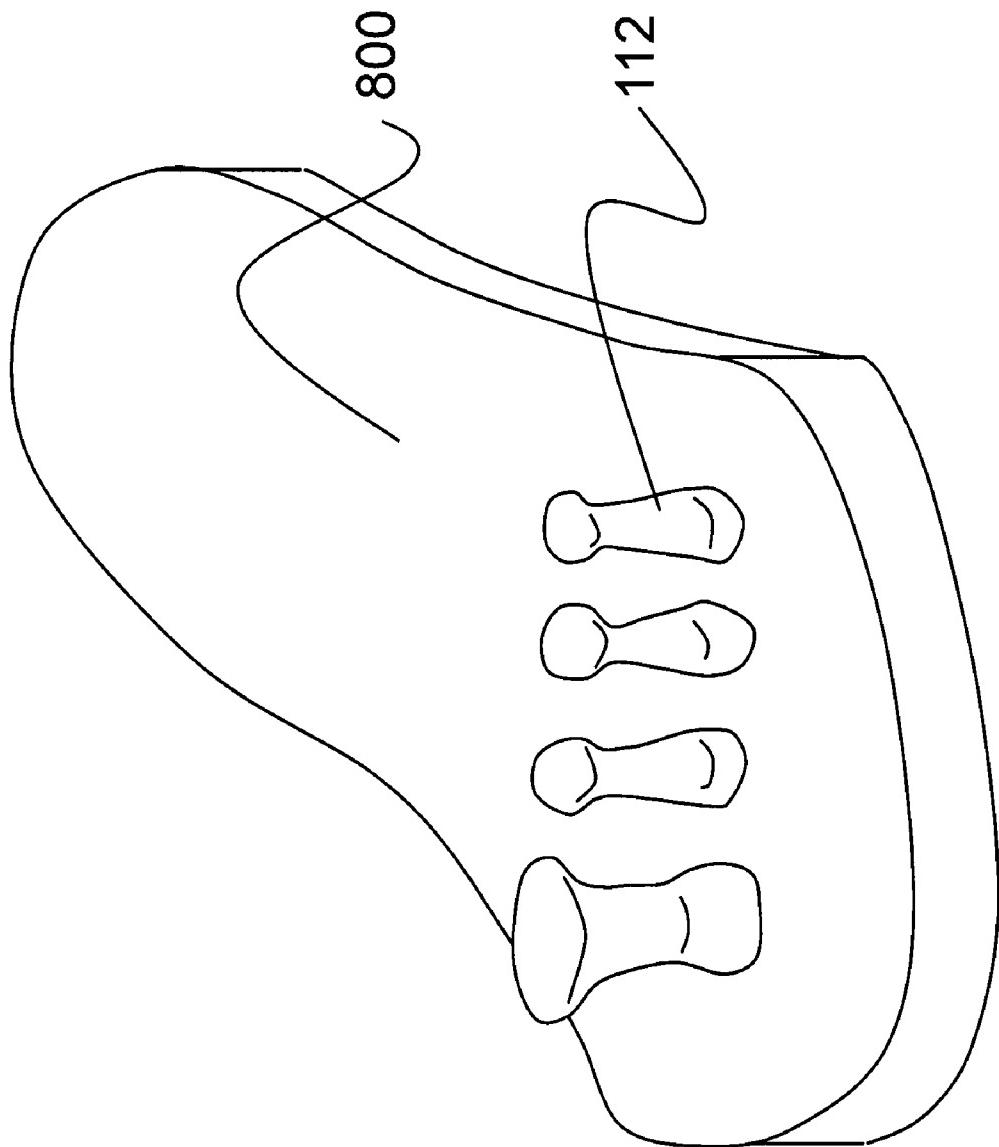
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FIG

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FIG.

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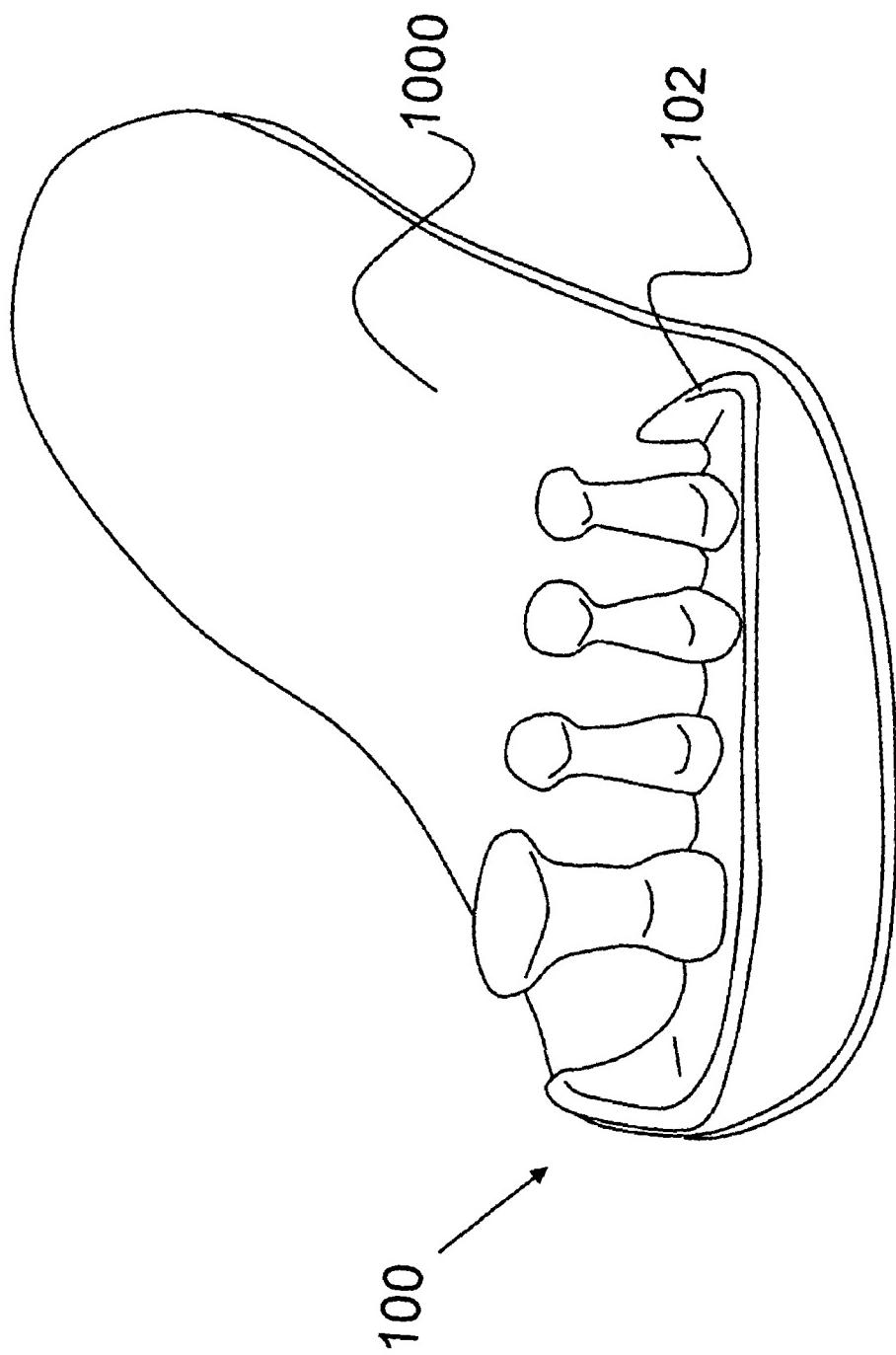


FIG. 10

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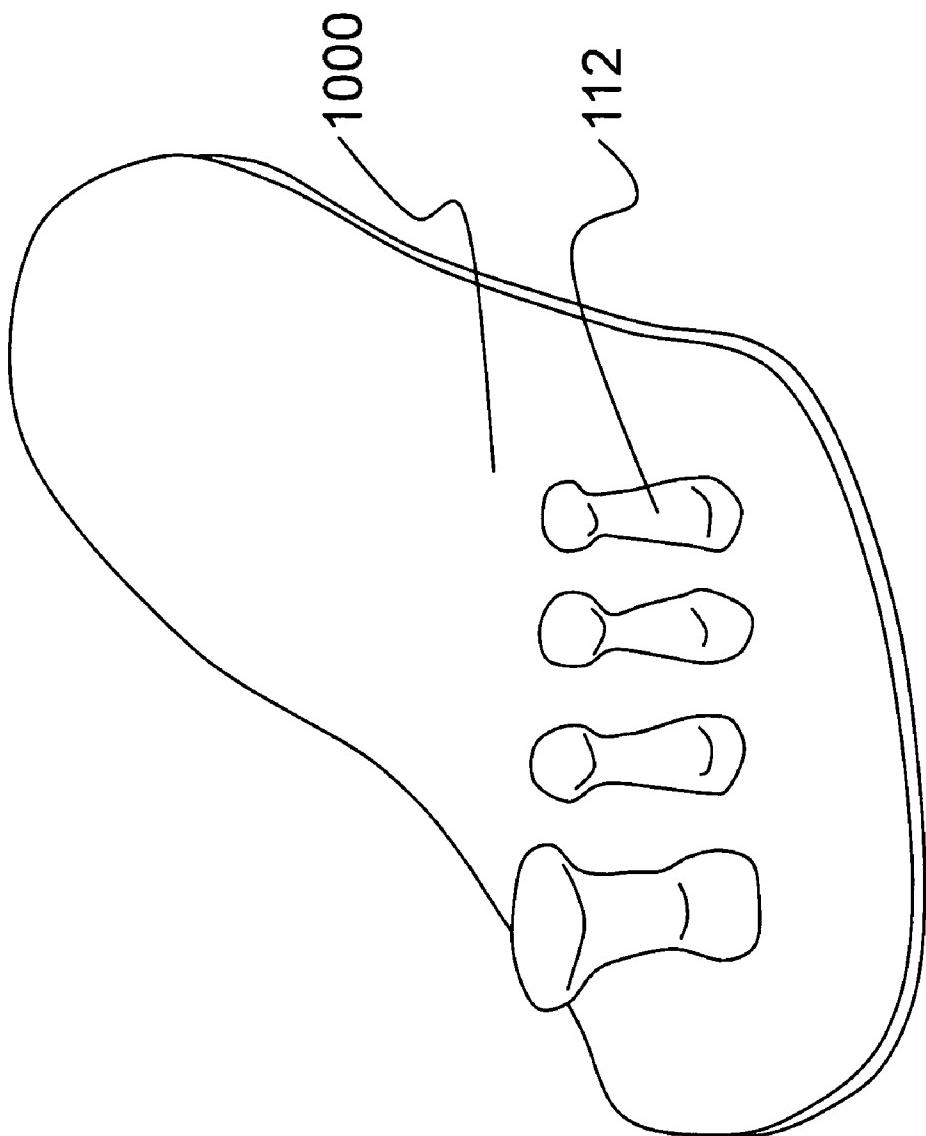


FIG. 11

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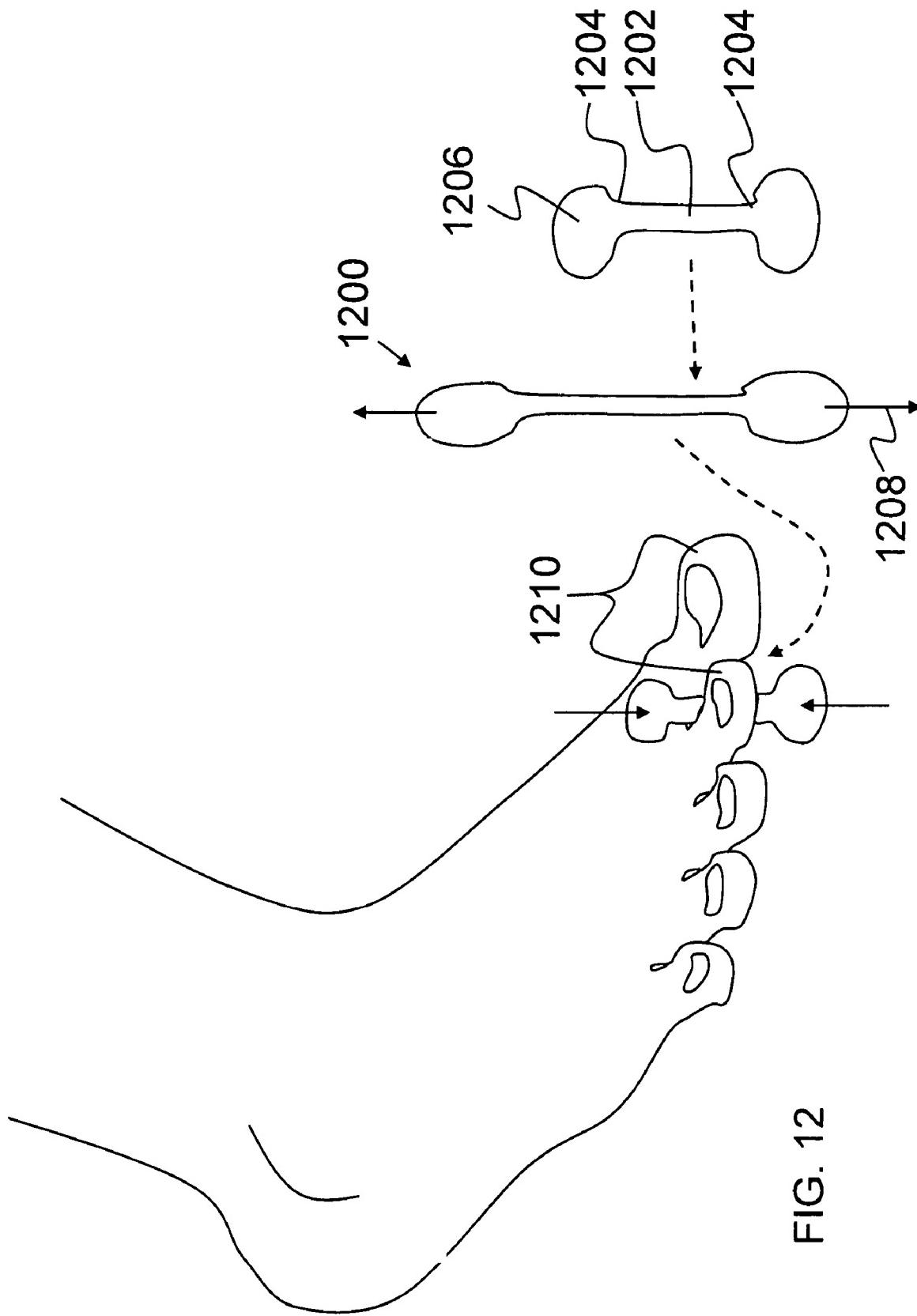


FIG. 12

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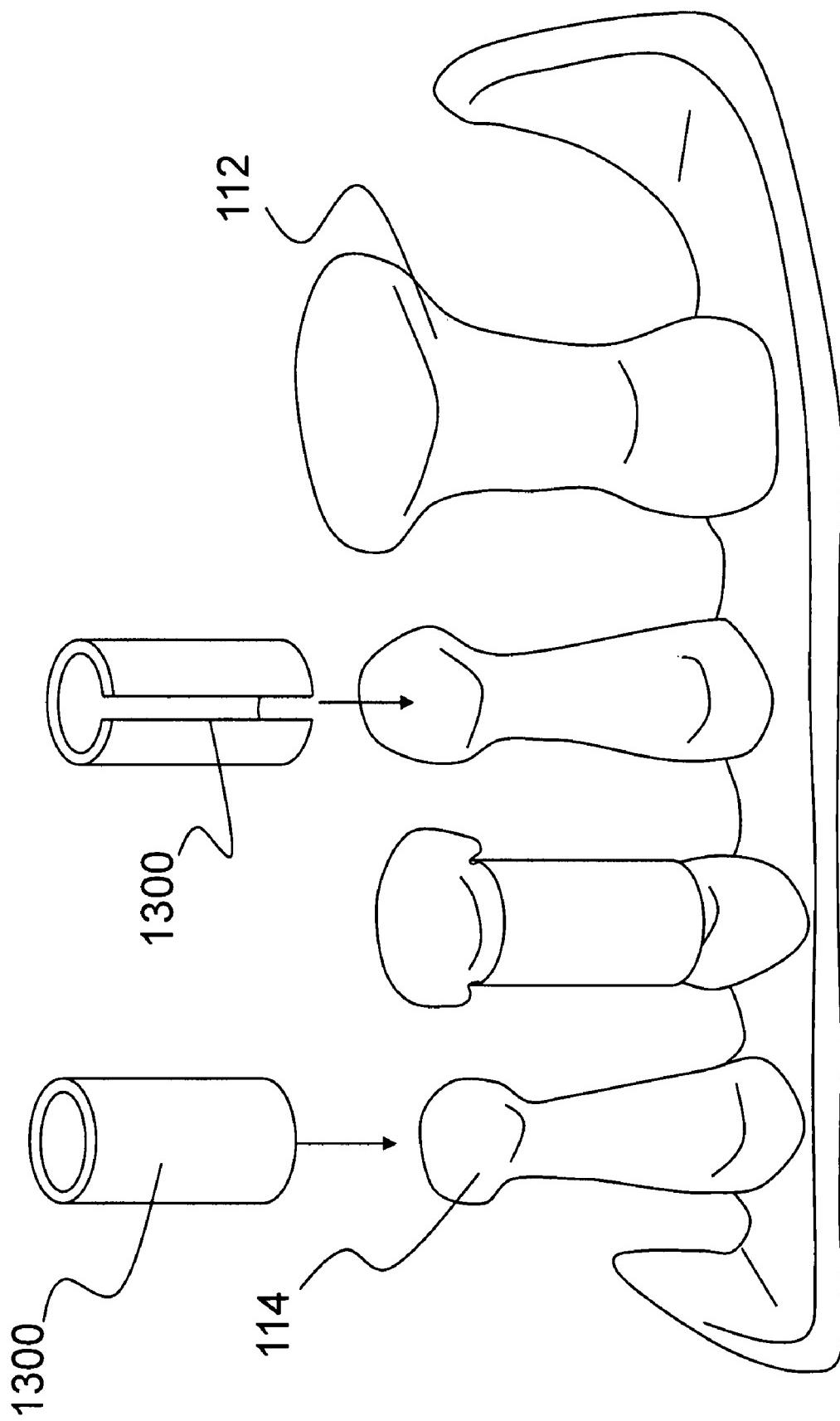


FIG. 13

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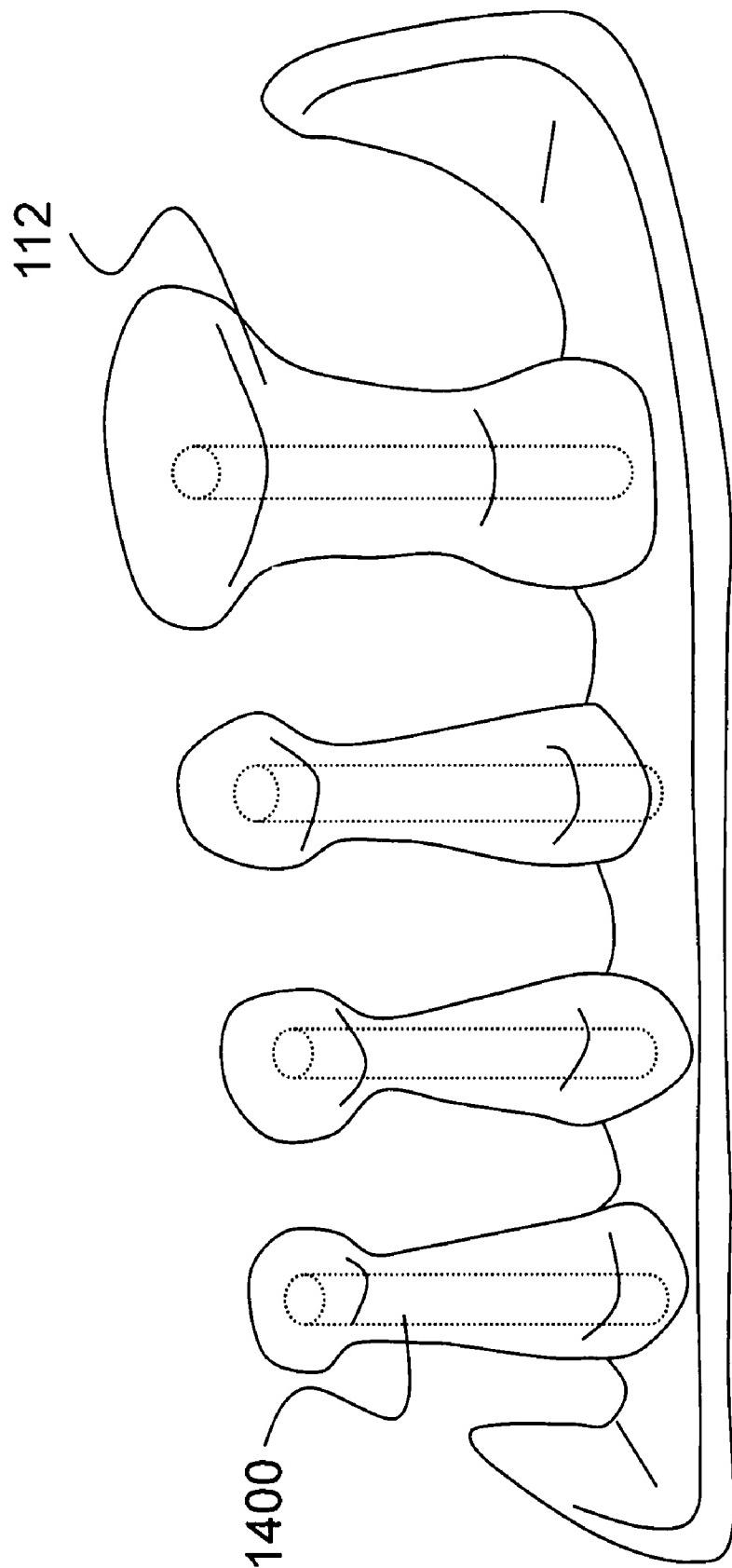


FIG. 14

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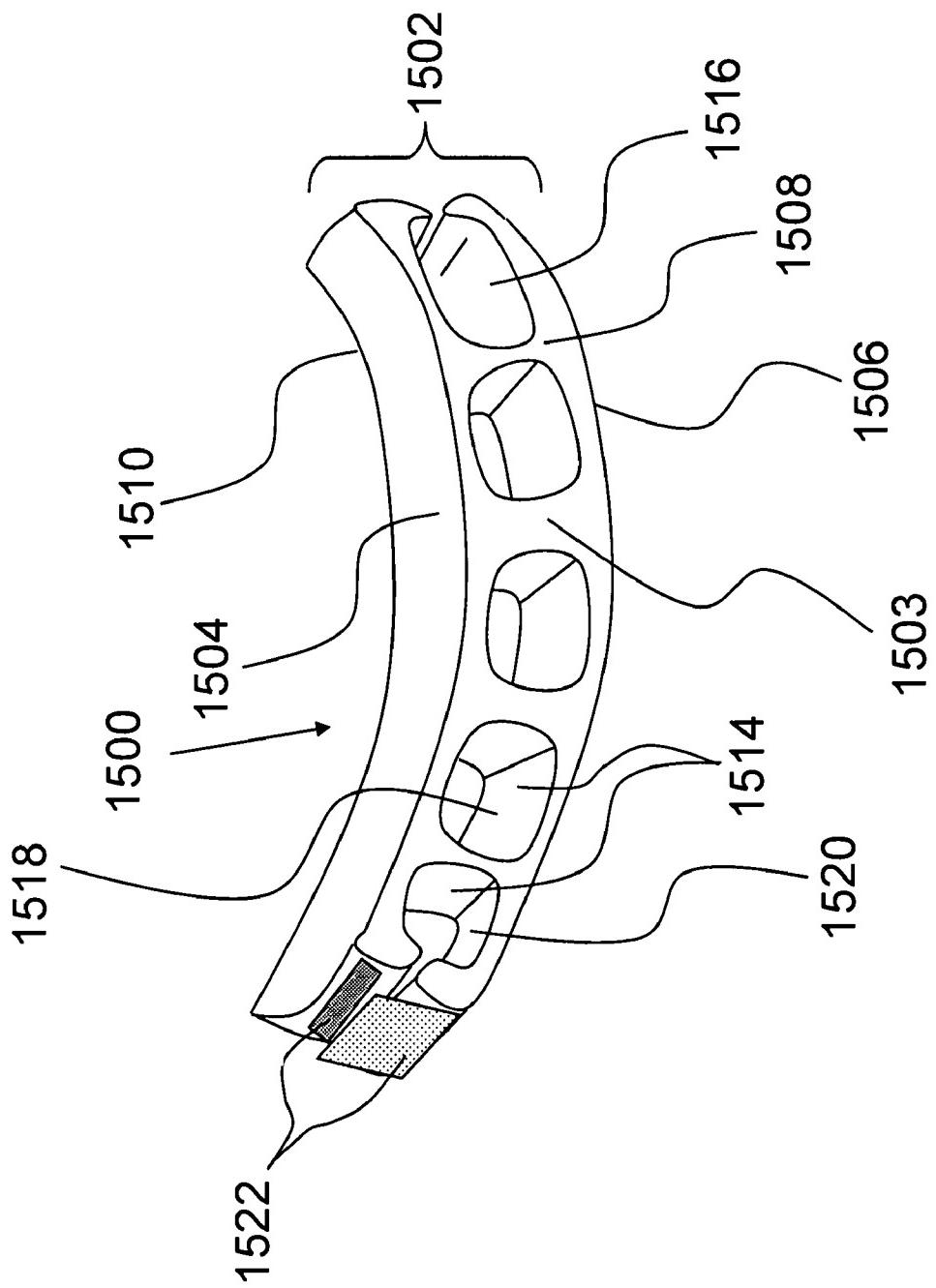


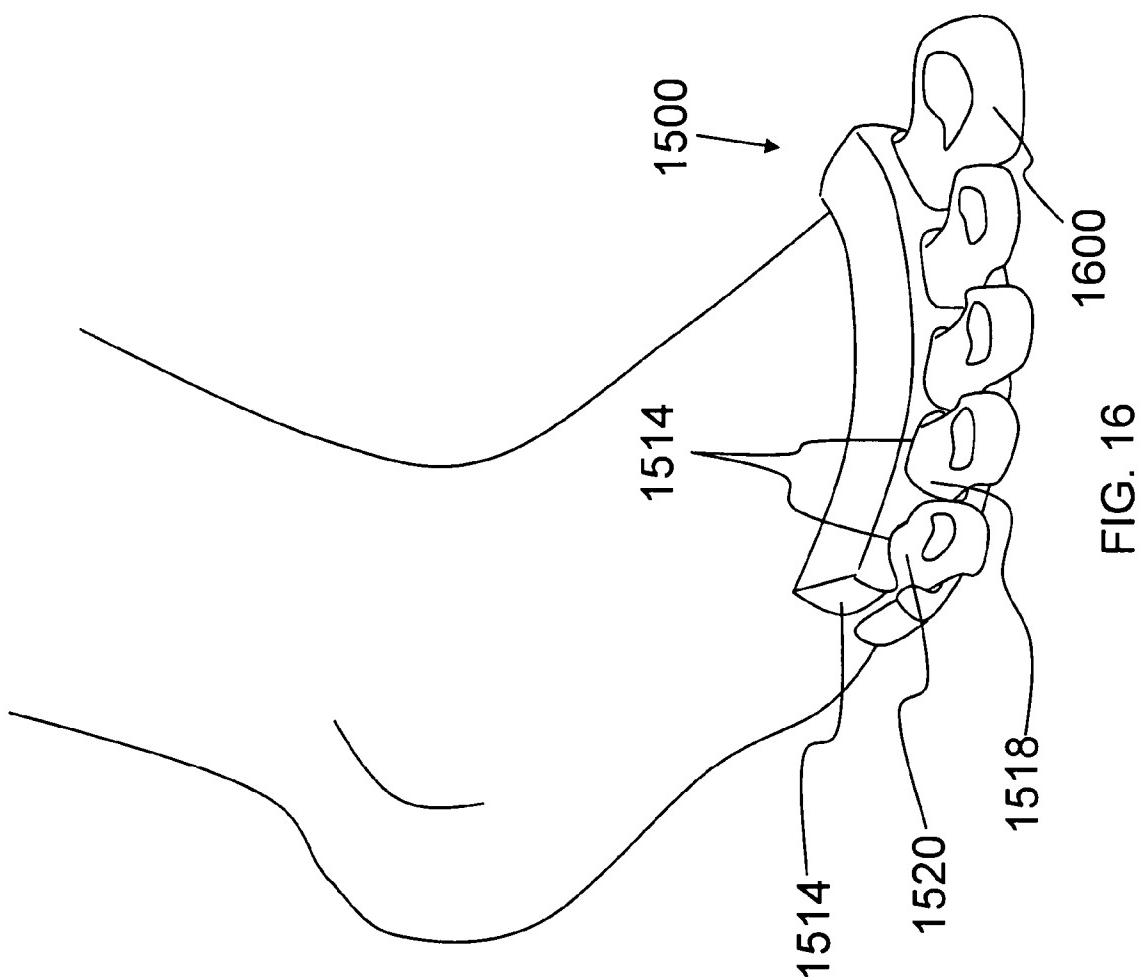
FIG. 15

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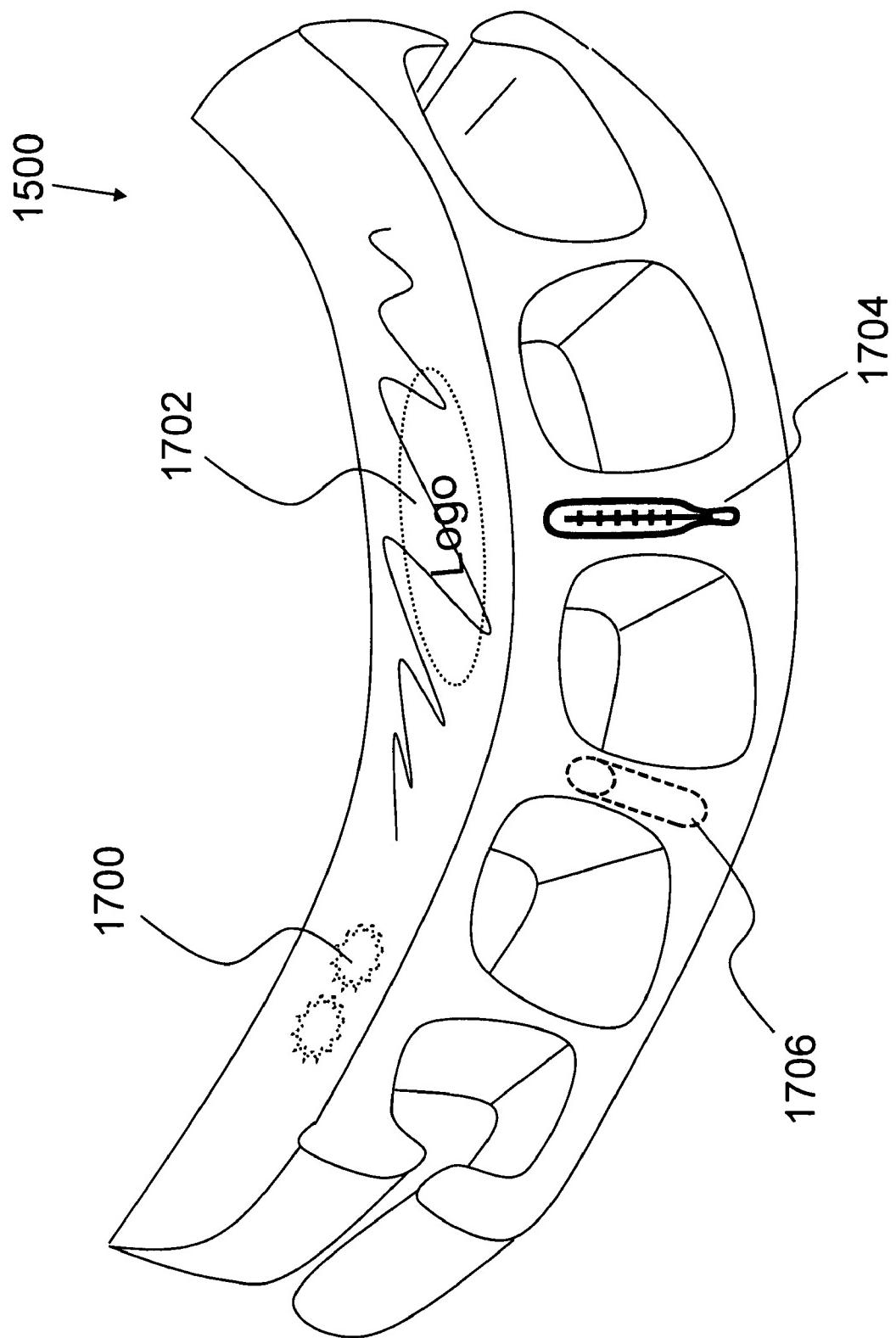


FIG. 17

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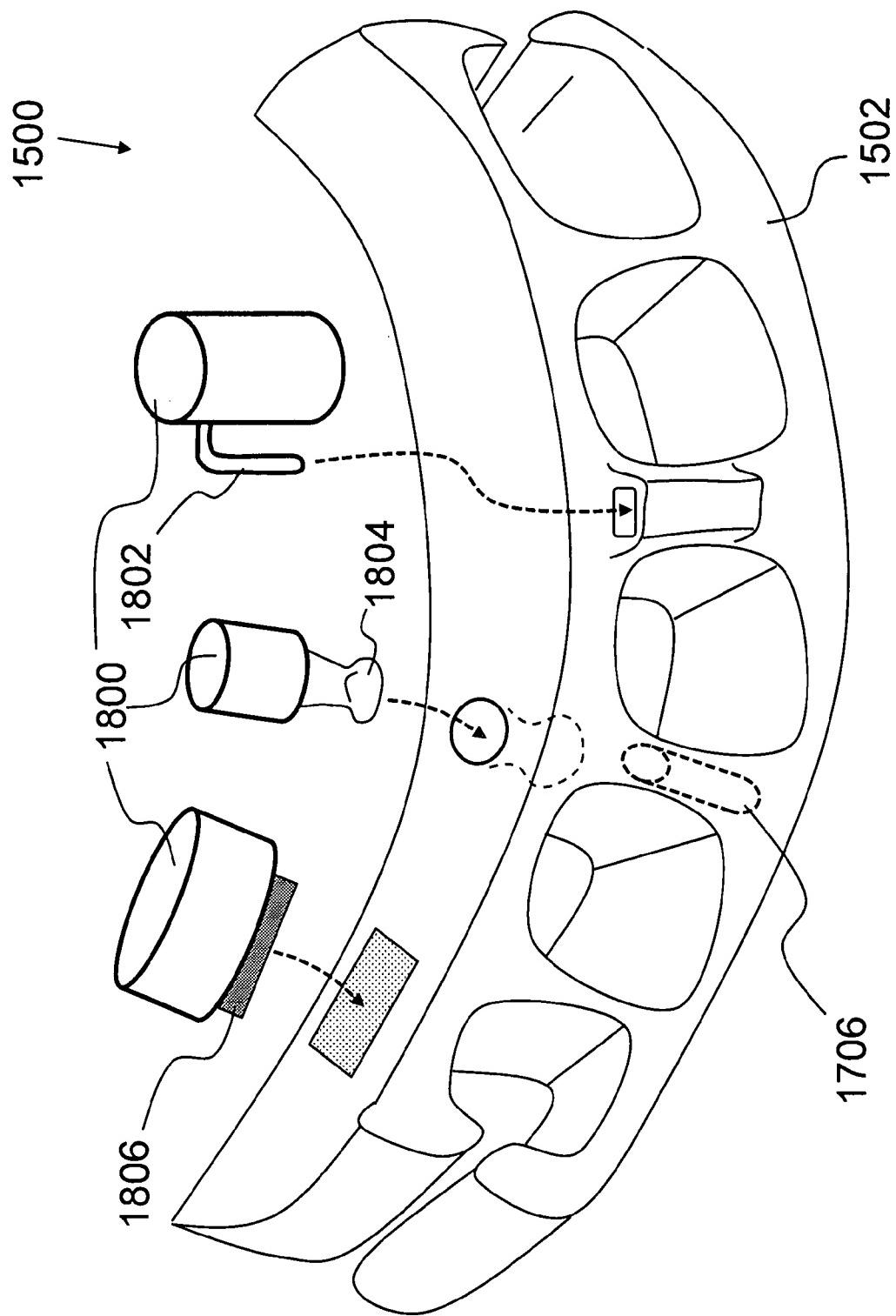


FIG. 18

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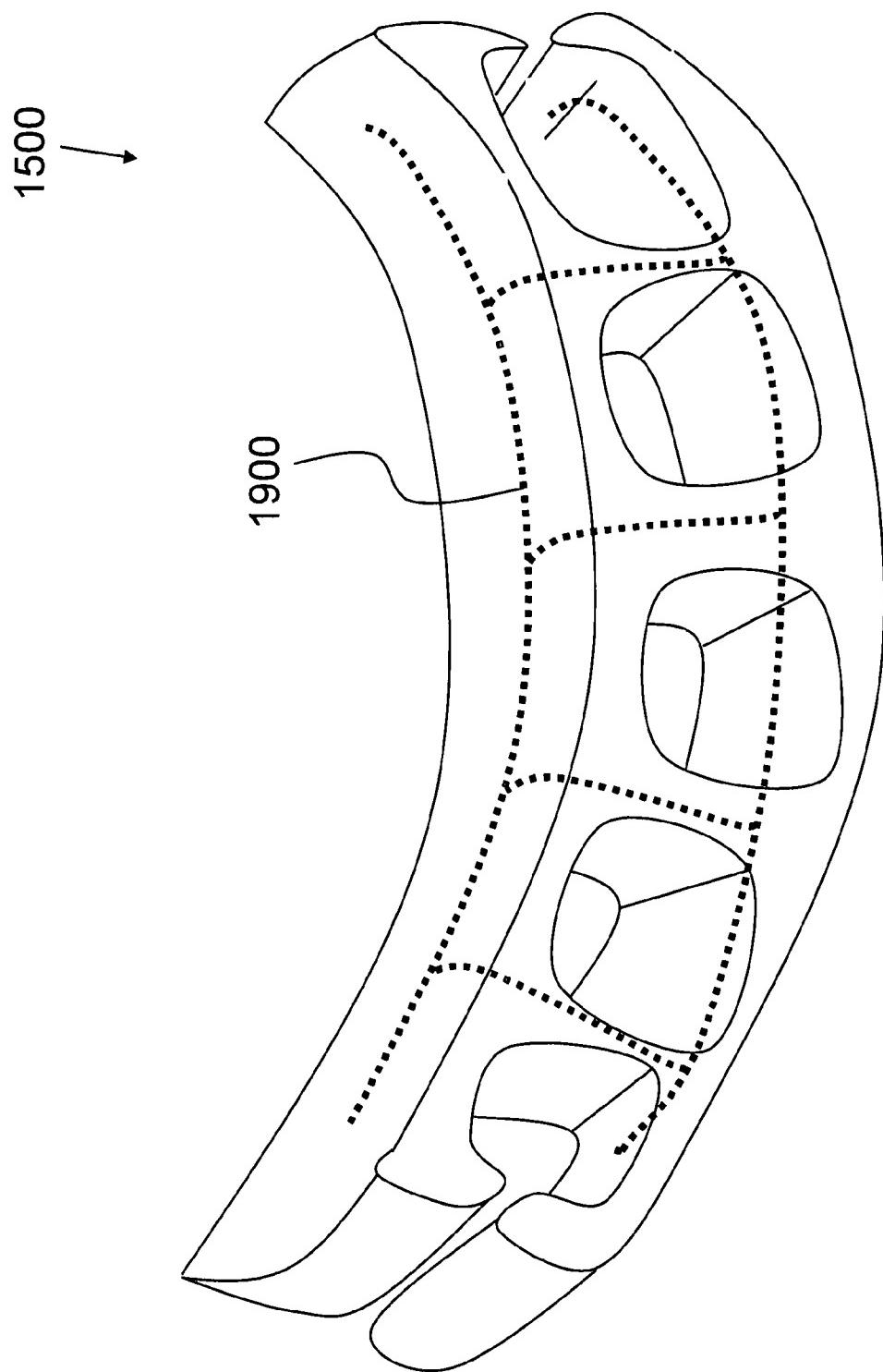


FIG. 19

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**FOOT-THERAPY AND TOE-ALIGNING
DEVICE**
PRIORITY CLAIM

The present application is a Continuation-in-Part patent application, claiming the benefit of priority of U.S. patent application Ser. No. 11/541,067, filed on Sep. 28, 2006, now U.S. Pat. No. 7,322,915 entitled, "Toe Stretcher," which is a divisional application that claims the benefit of priority of U.S. application Ser. No. 10/687,354, filed on Oct. 17, 2003, entitled, "Toe Stretcher," now issued as U.S. Pat. No. 7,131,939.

BACKGROUND OF THE INVENTION
(1) Field of the Invention

The present invention relates to an exercise tool, and more particularly, to a foot-therapy and toe-aligning device that is devised to align, separate, treat, and stretch toes.

(2) Description of Related Art

Therapy and exercise tools have long been known in prior art. Recently, such tools have been applied to not only stretch larger muscles, but also to those in the feet and toes. Several toe-stretching, exercising and aligning devices have been invented where a user places a toe stretcher (aligner) between the user's toes. However, as scientific understanding advances, more effective and convenient devices are now possible.

A few advantages of existing toe stretcher devices are that they generally increase foot strength, increase toe and ankle flexibility, improve arches, stretch Achilles' tendons, and realign toes. Although toe stretchers devised to-date partially fulfill this need, they are difficult to use and remain tied to past technology and information, limiting their convenience and effectiveness. By way of example, U.S. Pat. No. 5,076,263, issued to Funatogawa (hereinafter "the Funatogawa invention"), discloses a toe holder consisting of a frame with five holes (each separated by a toe post) for toe insertion. The five holes are substantially circular, with each circle being sealed around its perimeter. Because each circle is sealed, inserting all five toes has been problematic, making it difficult to put the toe stretcher on and take it off. Additionally, this design does not allow for the wide variations seen in foot/toe shape or condition. Thus, in some cases, the devices are unwearable. Additionally, altering the relative positioning of the individual posts to easily fit a specific person's foot, or condition is again impossible with the Funatogawa invention because the surrounding frame is connected with each toe post. This also makes it impossible to separate the frame for toe insertion. Separating the frame (i.e., pulling top and bottom portions of the frame away from each other) in the Funatogawa invention would pull the toe posts together, thereby causing the toe holes to become increasingly narrow upon elongation. Because the holes are sealed around their perimeter, the Funatogawa invention does not allow for a more custom, individual post positioning. Further, the Funatogawa invention does not mention a means to keep the post in a custom position (i.e., through elongation and return).

Additionally, the Applicant of the present invention previously filed U.S. patent application Ser. No. 10/687,354, entitled, "Toe Stretcher" (hereinafter "application '354"), now issued as U.S. Pat. No. 7,131,939. Application '354 disclosed a toe stretcher having a frame with a separator for separating a plurality of toes. The frame included a top portion, a bottom portion, a front portion, and a back portion. The frame further included a plurality of holes through the frame for insertion of

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a plurality of toes, wherein each hole in the plurality of holes includes an entrance into the back portion, an exit from the front portion, and surrounding walls connecting the entrance with the exit. The surrounding wall in at least one hole in the plurality of holes is continuous and thereby sealed, and the surrounding wall in at least one other hole in the plurality of holes is non-continuous and thereby not sealed, serving as an openable toe hole allowing for easy insertion of a toe. While application '354 is particularly effective in stretching and aligning a user's toes, it requires a user to force at least one toe through a hole.

U.S. Pat. No. D415,858, issued to Funatogawa (hereinafter "the Funatogawa2 invention"), discloses a die-cut toe separator design, common in the cosmetic industry, having a bottom frame with at least four toe posts protruding up from the bottom frame. The toe separator in the Funatogawa2 invention appears to be formed of a die-cut foam and does not produce or teach a calculated balance of elastomeric properties and design shapes. Die-cut foam toe separators (for painting toe nails) are common and have been well known in the art for several years. Die-cut foam typically results in 90 degree angles, such as the 90 degree angles shown between the toe holes and the front and back portions (i.e., two-planes) of the frame in the Funatogawa2 invention. The two-plane, 90 degree cut and thickness represented in the Funatogawa2 invention would be extremely difficult if not impossible, to generate if the product disclosed in the Funatogawa2 invention was die-cut of an elastomeric gel material.

Additionally, the two-plane die-cutting design in the Funatogawa2 invention does not disclose ergonomically shaped toe posts. For beneficial effects, a user would ideally wear the product for an extended period of time, unlike cosmetic toe separators. Because of the sharp edges and two-plane thick posts, the Funatogawa2 invention disclosed in the design patent cannot be worn for extended periods as it would be extremely uncomfortable. The 90 degree edges and planer surfaces of the funtagawa2 invention would focus and localize pressure on the skin, the underlying muscle, the nerves, and the bone. As such, the Funatogawa2 invention was clearly not intended to be a therapeutic tool.

Due to the die-cut foam and its two-plane design, the toe separator disclosed in the Funatogawa2 invention could not have the required properties of elongation, contraction and compression resistance, and still be comfortable to use and impart therapeutic benefits.

Further, as noted in the illustrations of the Funatogawa2 invention, the proportionality of the thickness-to-length-to-height dimensions of the toe separator are sufficient to allow a user to place toes within the toe separator. However, the dimensions do not provide a sufficient proportionality to allow a user to stretch the toes outward and away from the ball of the foot. Thus, based on the illustrations of the Funatogawa2 invention, it is clear that the toe separator was designed as a cosmetic tool rather than an exercise and therapeutic device.

Additionally, foam does not elongate sufficiently to allow a user to stretch the toe post or frame. Thus, a need exists for an intended stretchable toe post (and/or frame) because in stretching, the toe post becomes thinner in diameter and is thereby more easily placed between the user's toes. Upon release, a stretched toe post would contract in length and expand circumferentially to conform tightly to and effectively hold the user's toes, thereby remaining in the desired position. When released, the post would expand outwardly to increase pressure against the toes and thereby hold the device in the desired position. Equally significant, the posts would contract along a lengthwise axis to impart a lengthwise axis

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compressive holding force on the surface of the toe as well, also holding the device in the desired position. The forces resulting from contraction and elongation, individually and in combination, would easily enable a user to place, affix and maintain a toe post position between a user's toes.

Therefore, it can be appreciated that a continuing need exists for a new and improved foot-therapy, exercise and aligning device that allows for axially, ergonomically-contoured post shapes, and a means of maintaining a post in a custom placed position through a calculated balance of elastomeric properties and design shape.

SUMMARY OF INVENTION

The present invention relates to an exercise tool, and more particularly, to an exercise tool devised as a foot-therapy device to align, separate, and stretch toes. In one aspect, the devices comprise a frame that includes a top portion and a bottom portion. A plurality of posts (that are formed of an elastic (e.g., elastomeric) material) are connected with and extend from the top portion of the frame, whereby a user may place at least one of the plurality of posts between a user's toes. The posts have a length, a diameter, and a circumference, and further possess elastic (e.g., elastomeric) properties.

In another aspect, each of the plurality of posts has an outer edge and further comprises a handle attached with the outer edge.

In yet another aspect, the handles include an attachment mechanism, allowing user to connect the handles using a connector that connects with the attachment mechanism.

In yet another aspect, the attachment mechanism includes holes formed through the plurality of handles such that a user can connect the handles by using a connector that passes through the holes.

Additionally, the elastic material is an elastomer gel.

In another aspect, the device (e.g., frame and/or posts) is formed of an elastic material, such as an elastomer gel.

In yet another aspect, the handle is formed as a ring to allow a user to grasp the ring and stretch a post.

Additionally, each of the plurality of posts has a length, an outer post surface, and a center post axis running the post length. Further, the elastic material in the post has a density, with the density varying from the outer post surface to the center post axis.

Furthermore, the frame has an outer frame surface, a frame length, and a center frame-axis running the frame length. Additionally, the elastic material in the frame has a density, with the density varying from the outer frame surface to the center frame-axis.

In yet another aspect, a rigid material is positioned within the frame for providing a rigid support.

In another aspect, an electronic device is attached with the foot-therapy and toe-aligning device. The electronic device is a device selected from a group consisting of a vibrating system for massaging and stimulating a user's toes, a light system, a heating system, a sensor, a cooling system, and a pulsating pressure mechanism.

In another aspect, a motion sensor is connected with an electronic device for actuating the electronic device.

In yet another aspect, a remote control is connected with the electronic device for allowing a user to selectively control the electronic device.

Additionally, the electronic device is controlled by a processing unit.

In another aspect, a controller chip is connected with the foot-therapy and toe-aligning device.

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Further, the sensor is configured to provide feedback to a user when a predetermined threshold is reached. The feedback is provided in a manner selected from a group consisting of at least one of light, sound, vibration, and a change in temperature.

In yet another aspect, each of the plurality of posts has an exposed outer edge and further comprises a plurality of handles connected with the outer edge of each of the plurality of posts, where a handle is connected with an outer edge. Additionally, an electronic device is attached with the handle.

In another aspect, the frame has an outer frame surface, a frame length, and a center frame-axis running the frame length. Each of the plurality of posts has a length, an outer post surface, and a center post axis running the post length. A magnet is attached with the foot-therapy and toe-aligning device in a manner selected from a group consisting of being positioned within a post, being attached with the outer post surface of the post, being positioned within an interior of the frame, and being attached with the outer frame surface of the frame.

In another aspect, each of the plurality of posts has an exposed outer edge and further comprises a plurality of handles connected with the outer edge of each of the plurality of posts, where a handle is connected with an outer edge. Further, a magnet is attached with the handle.

In yet another aspect, a port is formed through at least one of the plurality of posts and/or frame. The port is formed to allow a user to insert a material into the port for dispersal proximate to a user's toes.

In another aspect, the frame has an outer frame surface and each of the plurality of posts has an outer post surface. Additionally, a reservoir is formed in at least one of the following: the outer post surface and the outer frame surface, whereby a user may position a material into the reservoir.

In yet another aspect, each of the plurality of posts has an exposed outer edge and further comprises a plurality of handles connected with the outer edge of each of the plurality of posts, where a single handle is connected with a single outer edge. Further, a reservoir is formed in the handle.

In another aspect, a footwear is attached with the frame.

In yet another aspect, the frame is formed as a shoe sole insert, thereby allowing a user to place the foot-therapy and toe-aligning device within a shoe and wear the shoe while treating the user's toes.

In another aspect, the present invention further comprises a shoe sole insert attached with the frame, thereby allowing a user to place the foot-therapy and toe-aligning device within a shoe and wear the shoe while treating the user's toes.

In another aspect, each handle is integrally formed with its corresponding post as a single piece.

In yet another aspect, the present invention further comprises a sleeve for positioning over a toe post.

In another aspect, a support structure is disposed within the toe post.

Further, the frame is formed of a transparent material, allowing light to pass through the material.

In yet another aspect, an implantation element is inserted within the frame.

In another aspect, the foot-therapy and toe-aligning device comprises an elongated post formed of an elastic material. The elongated post includes two opposing edges, whereby a user may use the two opposing edges to stretch the elongated post and place the now stretched elongated post between two adjacent toes, and where upon release, the elastic material of the post causes the post to conform its shape to fit snugly against the user's toes.

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In yet another aspect, handles are attached at each of the two opposing edges, whereby a user may use the handles to stretch the elongated post. Additionally, the handles are integrally formed with the elongated post as a single piece.

In another aspect, the foot-therapy and toe-aligning device comprises a frame with a separator for separating a plurality of toes. The frame comprises a top portion, a bottom portion, a front portion, and a back portion. The frame further includes a plurality of holes through the frame for insertion of a plurality of toes. Each hole in the plurality of holes includes an entrance into the back portion, an exit from the front portion, and surrounding walls connecting the entrance with the exit. The surrounding walls in at least one hole in the plurality of holes is continuous and thereby sealed. Alternatively, the surrounding walls in at least one other hole in the plurality of holes is non-continuous and thereby not sealed, serving as an openable toe hole allowing for easy insertion of a toe, whereby a user may place the toe stretcher on the plurality of toes and effectively separate and stretch the toes.

In another aspect, the frame is formed of a transparent, elastic material and further includes an implantation element inserted within the frame.

In yet another aspect, a reservoir system is formed within the frame for receiving a material externally and applying the material to a user through use of the reservoir and the device.

In another aspect, an attachment mechanism is attached with the frame for allowing a user to attach an external object (such as an electronic device) with the device via the attachment mechanism. The electronic device can be attached internally or externally (using the attachment mechanism). Non-limiting examples of such an electronic device include a vibrator mechanism, a heating system, a cooling system, and a light system.

Finally, the present invention also includes a method for forming and using the device described herein. As can be appreciated by one skilled in the art, the method for forming the device comprises a plurality of acts of forming and attaching the device and related components. Further, the method for using the device comprises a plurality of acts applying and using the device as described below.

BRIEF DESCRIPTION OF THE DRAWINGS

The nature of the foot-therapy and toe-aligning device described herein will be readily apparent in the following drawings, in which:

FIG. 1 is a front-view of a foot-therapy and toe-aligning device according to the present invention;

FIG. 2 is a front-view of a foot-therapy and toe-aligning device according to the present invention, illustrating the device being attached with a user's toes;

FIG. 3A is a front-view of a foot-therapy and toe-aligning device according to the present invention;

FIG. 3B is a front-view of a foot-therapy and toe-aligning device, illustrating various handle configurations according to the present invention;

FIG. 3C is a front-view of a foot-therapy and toe-aligning device, illustrating a handle configuration according to the present invention;

FIG. 4 is a front-view of a foot-therapy and toe-aligning device according to the present invention, illustrating holes formed through a plurality of posts;

FIG. 5 is a front-view of a foot-therapy and toe-aligning device according to the present invention, illustrating an electronic device being connected with the foot-therapy and toe-aligning device;

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FIG. 6 is a front-view of a foot-therapy and toe-aligning device according to the present invention, illustrating a motion sensor and a remote control being connected with the electronic device;

FIG. 7 is a front-view of a foot-therapy and toe-aligning device according to the present invention, illustrating a port being formed through a post, and a reservoir being formed on the foot-therapy and toe-aligning device;

FIG. 8 is a front-view of a foot-therapy and toe-aligning device according to the present invention, illustrating the foot-therapy and toe-aligning device being attached with a footwear;

FIG. 9 is a front-view of a foot-therapy and toe-aligning device according to the present invention, illustrating the foot-therapy and toe-aligning device being integrally formed with the footwear;

FIG. 10 is a front-view of a foot-therapy and toe-aligning device according to the present invention, illustrating the foot-therapy and toe-aligning device being attached with a shoe insole;

FIG. 11 is a front-view of a foot-therapy and toe-aligning device according to the present invention, illustrating the foot-therapy and toe-aligning device being integrally formed with shoe insole;

FIG. 12 is an illustration of another aspect of a foot-therapy and toe-aligning device according to the present invention, where the foot-therapy and toe-aligning device is formed as a dumbbell shaped post;

FIG. 13 is an illustration of a sleeve for covering a toe post according to the present invention;

FIG. 14 is an illustration of the foot-therapy and toe-aligning device according to the present invention, with a support structure disposed therein;

FIG. 15 is an illustration of a foot-therapy and toe-aligning device according to the present invention;

FIG. 16 is an illustration of a foot-therapy and toe-aligning device according to the present invention, with toes inserted therein;

FIG. 17 is an illustration of a foot-therapy and toe-aligning device according to the present invention, illustrating implantation elements implanted within the device;

FIG. 18 is an illustration of a foot-therapy and toe-aligning device according to the present invention, illustrating external objects being attached with the device via an attachment mechanism; and

FIG. 19 is an illustration of a foot-therapy and toe-aligning device according to the present invention, illustrating a support structure.

DETAILED DESCRIPTION

The present invention relates to an exercise tool, and more particularly, to a foot-therapy and toe-aligning device that is devised to align, separate, treat, and stretch toes. The following description is presented to enable one of ordinary skill in the art to make and use the invention and to incorporate it in the context of particular applications. Various modifications, as well as a variety of uses in different applications will be readily apparent to those skilled in the art, and the general principles defined herein may be applied to a wide range of embodiments. Thus, the present invention is not intended to be limited to the embodiments presented, but is to be accorded the widest scope consistent with the principles and novel features disclosed herein.

In the following detailed description, numerous specific details are set forth in order to provide a more thorough understanding of the present invention. However, it will be

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apparent to one skilled in the art that the present invention may be practiced without necessarily being limited to these specific details. In other instances, well-known structures and devices may be shown in block diagram form, rather than in detail, in order to avoid obscuring the present invention.

The reader's attention is directed to all papers and documents which are filed concurrently with this specification and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference. All the features disclosed in this specification, (including any accompanying claims, abstract, and drawings) may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

Furthermore, any element in a claim that does not explicitly state "means for" performing a specified function, or "step for" performing a specific function, is not to be interpreted as a "means" or "step" clause as specified in 35 U.S.C. Section 112, Paragraph 6. In particular, the use of "step of" or "act of" in the claims herein is not intended to invoke the provisions of 35 U.S.C. 112, Paragraph 6.

(1) Description of Various Aspects

A foot-therapy and toe-aligning device 100 according to the present invention is shown in FIG. 1. The foot-therapy and toe-aligning device 100 comprises a frame 102 that allows for a post (described below) to become attached, embedded, or integrally formed thereto. The device 100 (including the frame 102) is constructed of any suitable material, a non-limiting example of which includes an elastic material (e.g., an elastomeric gel such as a polymer or any other suitable elastic material). Although the frame 102 can be formed of other materials, it is desirable that it is formed of an elastomeric material. Additionally, the frame 102 may be optionally inflatable or filled with a fluid. When inflatable, the frame 102 may be inflatable to various pressures. Furthermore, the frame 102 may be formed through any suitable means for forming a frame 102, non-limiting examples of which include injection molding, cast molding, compression molding, and extrusion molding. Further, the device (e.g., frame 102 and posts) are formed of a material (e.g., transparent material) that allows light to pass through the material. For example, the elastomeric gel is transparent such that a user can see into or through the frame 102 (and posts) and the device 100. The device 100 can be formed such that its transparency ranges from 100 percent to a being opaque.

The frame 102 includes a top portion 104, a bottom portion 106, a front portion 108, and a back portion 110. A plurality of posts 112 formed of an elastic material are connected with the frame 102 such that they extend from the top portion 104. A non-limiting example of the elastic/elastomeric material is a polymer elastic gel. Each of the plurality of posts 112 has an exposed outer edge 114. The posts 112 can be separately formed and attached with the frame 102 or, in another aspect, the posts 112 are integrally formed with the frame 102 through a single, injection-molding process where the frame 102 and posts 112 are separate in name only.

FIG. 2 illustrates a user 200 using the foot-therapy and toe-aligning device 100. As shown, a user 200 may place at least one of the plurality of posts 112 between their toes 202 and pull 203 the post 112 to stretch and elongate the post 112 between the toes 202. Upon release, the elastic/elastomeric material of the post 112 causes the post 112 to attempt to return 204 (contract) to its original shape. Because a toe 202 is placed between two adjacent posts 112, the post cannot return to its exact original shape, thereby causing portions of

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the post to expand out and conform its shape to, and fit, snugly against, the user's toes 202. For example, a top portion (and sometimes a bottom portion) of the post expands out to fit snugly against the toes 202.

5 The ability of the posts 112 to conform their shape to a user's toes 202 is a beneficial feature of the present invention. For example, the toe posts in the prior art are formed of a die-cut or pressure molded semi-rigid foam. Due to the nature of foam, foam does not allow for the required elongation and 10 subsequent conforming shape of the toe posts, as applicable to the present invention. In other prior art, such as Application '354, the outer edges of the toe posts are connected by a frame. Because the outer edges of the frame are connected, the toe posts in Application '354 cannot be easily elongated and returned to conform their shape to the user's toes.

15 For further clarification, referring to FIG. 1, the toe posts 112 have a length 116, a diameter 118, and a circumference 120. Being formed of an elastomeric material causes the toe posts 112 to have properties such that stretching the toe posts 112 lengthwise 116 causes the toe posts 112 to become thinner in diameter 118 and thereby more easily placed between the user's toes. Upon release, a stretched toe post 112 would contract in length 116 and expand circumferentially 120 to conform tightly to and effectively hold the user's toes, thereby remaining in the desired position. In other words, when released, the post 112 expands its diameter 118 to increase pressure against the toes and thereby hold the device in the desired position. Equally significant, the posts 112 contract along a lengthwise 116 axis to impart a lengthwise 30 116 axis compressive holding force on the surface of the toe as well, also holding the device in the desired position. The forces resulting from contraction and elongation, individually and in combination, easily enable a user to place, affix and maintain a toe post 112 position between a user's toes.

35 Thus, the elastomeric material of the toe posts 112 of the present invention provides a benefit that allows the foot therapy and toe-aligning device 100 to be easily applied to a user's toes 202 by being elongated and then placed individually between adjacent toes 202. The toe post 112 can be positioned fore and aft between the toes 202 to allow for user-specific placement and positioning. Thereafter, upon release, the elastomeric material of the toe post 112 causes the toe post 112 to conform its shape to the user's toes 202 and to be positioned and maintained at numerous locations between the user's toes 202 for customizable positioning. To provide this effect, the toe posts 112 are formed of an elastomeric polymer that has sufficient elastomeric properties. For example, if the toe posts 112 are too soft, then they will not provide a therapeutic benefit of separating adjacent toes 202. Alternatively, if the toe posts 112 are too hard (e.g., hard plastic), then they will not allow the toe posts 112 to be stretched and released to be conformed to the user's toes 202.

40 As a non-limiting example, the toe posts 112 are desirably formed of an elastomeric material having the following properties: hardness between 20 and 90 on the Shore 00 scale for product comfort; elongation between 50% and 1000% for product functionality; and tensile strength between 100 and 2000 pounds per square inch (psi). More specifically, the toe posts 112 are formed of an elastomeric material having the 45 following properties: hardness between 35 and 80 on the Shore 00 scale; elongation between 50% and 800%; and tensile strength between 100 and 800 psi. As can be appreciated by one skilled in the art, the above ranges are for exemplary illustrative purposes only and are not intended to limit the present invention thereto.

50 As shown in the figures, the toe posts 112 are formed in any suitable ergonomic shape, non-limiting examples of which

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include being conically and/or cylindrically shaped. The toe post 112 is formed in a shape to provide a therapeutic benefit in combination with the properties of the elastomeric material. For example, in certain circumstances, a thicker toe post 112 would benefit from a softer elastomeric material. Alternatively, a thinner toe post 112 would benefit from harder elastomeric material.

It should be noted that the description above with respect to the elastomeric material of the toe posts 112 is also applicable to the frame 102. For example, the frame 102 can also be formed of an elastomeric material that includes all of the elastomeric properties listed above. Thus, the frame 102 is formed to also provide for extension and compression forces. In this aspect, the frame 102 can be stretched 206 along a lateral axis to allow a user to position the frame 102 against the user's 200 foot. Upon release of the stretched frame 102, the frame 102 contracts in an attempt to return to its original shape which causes the frame 102 to snuggly hold the toes 202 in place along the lateral axis of the frame 102.

As shown in FIG. 3A, the frame 102 has an outer frame surface 300, a frame length 302, and a center frame-axis 304 running the frame length 302. Additionally, each of the plurality of posts 112 has a length 306, an outer post surface 308, and a center post axis 310 running the post length 306. The material forming the frame 102 and posts 112 is formed to have a consistent density throughout the frame 102 and posts 112 respectively. In another aspect, the elastomeric material forming the posts 112 has a compression resistance and a density that varies from the outer post surface 308 to the center post axis 310 (as a non-limiting example, the density is greater at the center post axis 310 and decreases toward the outer post surface 308). In yet another aspect, the elastomeric material forming the frame 102 has a compression resistance and density that varies from the outer frame surface 300 to the center frame axis 304 (as a non-limiting example, the density is greater at the center frame axis 304 than the outer frame surface 300). The compression resistance is softer on the outside and harder on the inside of each of the respective locations. Alternatively, the compression resistance can be harder on the outside and softer on the inside.

To assist a user in stretching each post 112, each post 112 includes a handle 312 connected with the outer edge 114. The handle 312 can be formed as the outer edge 114 itself, or formed separately and attached with the outer edge 114. As a non-limiting example, the outer edge 114 of the toe post 112 is formed in a bulbous shape to operate as a handle 312. The handle 312 allows a user to easily stretch and elongate the post 112.

FIG. 3B illustrates additional integral and attached handle configurations according to the present invention. For example, the handle can be an integrally formed ring 314 that is formed at the outer edge 114 of the post 112. As can be appreciated by one skilled in the art, an example of such a process for forming an integrally formed ring 314 is one-piece injection molding. Using a ring-shape, a user can insert a finger into or grasp the ring to stretch the post 112. In another aspect, the handle can be a fused ring 316 that is separately formed and fused to the outer edge 114 of the post 112 using standard material fusing techniques (e.g., melting and gluing). In yet another aspect, the handle can be a solid ring 318 that is attached with an anchor 320 that is disposed within the post 112. For example, the solid ring 318 can be formed of a stiff material such as a hard plastic or metal that allows a user to grasp the handle and stretch the post 112, with the anchor 320 pulling up upon the outer edge 114. As can be appreciated by one skilled in the art, the handle is any suitable shape to allow a user to hold and stretch the post 112. For

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example, the handle can also be formed as a solid bar 322 that is attached with an anchor 320 disposed within the post 112.

FIG. 3C illustrates yet another handle configuration. In this aspect, the handle 312 is connected with the outer edge 114 of each of the plurality of posts 112. The handle 312 can be integrally formed with the posts 112, or formed as a separate item and attached with the posts 112 (either externally using an attachment mechanism (as described below) or internally). For example, the handle 312 can be connected with an anchor 320 that is disposed within each of the posts 112.

As shown in FIG. 4, the handles 312 optionally include an attachment mechanism 400, allowing a user to connect the handles 312 using a connector 402 that connects the attachment mechanism 400. The attachment mechanism 400 is any suitable mechanism or device that allows for connection with the connector 402, a non-limiting example of which includes holes formed through the handles 312. The connector 402 is any suitable mechanism or device that can be connected with the attachment mechanism 400 to allow a user to connect the handles 312, non-limiting examples of which include a thread and cord.

In some applications, it is desirable to have an integral flexible frame 102, such as that formed entirely of an elastomeric material. In other applications, it may be desirable to have a frame 102 that has an increased rigidity. As such, in another aspect, a rigid material 404 is positioned within the frame 102 to provide a rigid support for the frame 102. The rigid material 404 is any suitable mechanism or device for providing a rigid support for the frame 102, a non-limiting example of which includes a rigid rod, such as a plastic rod.

As shown in FIG. 5, to provide additional therapeutic benefits to a user, an electronic device 500 is attached with the foot-therapy and toe-aligning device 100. The electronic device 500 is attached with the foot-therapy and toe-aligning device 100 in any suitable manner to provide a desired therapeutic benefit, non-limiting examples of which include being positioned within a post 112, being attached with the outer post surface 308 of the post 112, being positioned within an interior of the frame 102, being attached with the outer frame surface 300 of the frame 102, and being attached with a handle 312 (interior and/or exterior).

The electronic device 500 is any suitable mechanism or device for providing a therapeutic benefit, non-limiting examples of which include a vibrating mechanism for massaging and stimulating a user's toes, a light system (e.g., light-emitting diode, near infra-red), a heating system (e.g., heating element), a cooling system, a sensor, and a pulsating pressure mechanism. The sensor is any suitable mechanism or device capable of sensing something, non-limiting examples of which include a pressure sensor, a light sensor, and a temperature sensor.

When a sensor is included, the sensor is configured to provide feedback when a predetermined threshold is reached. For example, if the sensor is a pressure sensor, the sensor may create a sound when a certain amount of pressing pressure is reached. As another non-limiting example, if the electronic device 500 is a heating element, an alarm may be sounded when the temperature reaches a certain degree. The feedback is any suitable feedback for alerting a user, or third party, that the predetermined threshold has been met, non-limiting examples of which include light, sound, vibration, and temperature (e.g., change in temperature). In other words, the feedback is any suitable feedback that can be received and interpreted by a user or a third party.

As can be appreciated by one skilled in the art, the electronic device 500 requires a power source. The power source

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may be included within the device, or maintained externally and electrically connected with the electronic device 500.

In another aspect, a magnet 502 is attached with the foot-therapy and toe-aligning device 100 to provide a therapeutic benefit. The magnet 502 is attached with the foot-therapy and toe-aligning device 100 in any suitable manner, non-limiting examples of which include being positioned within a post 112, being attached with the outer post surface 308 of the post 112, being positioned within an interior of the frame 102, being attached with the outer frame surface 300 of the frame 102, and being attached with a handle 312. For illustrative purposes with respect to FIG. 5, the magnet 502 is interchangeable with the electronic device 500.

As shown in FIG. 6, the electronic device 500 can be controlled through a variety of techniques. For example, a motion sensor 600 may be connected with electronic device 500 to actuate the device 500. In this aspect, the device 500 is turned on when the motion sensor 600 detects motion. As another example, a remote control 602 is connected with the electronic device 500 to allow a user to selectively control the electronic device 500, such as by turning it on, off, up, down, and to a time-cycle. The up and down controls relate to functions as applicable to certain electronic devices 500, such as when the electronic device is a heating element or a vibrating mechanism. Additionally, the remote control 602 can be either wired or wireless.

With the advent of new computer technologies, it may be desirable to control the electronic device 500 via a computer (i.e., processing unit). In this aspect, the remote control 602 is a processing unit that can operate the electronic device 500. For example, certain computer-controlled therapeutic programs can be operated and controlled via the processing unit. As a specific non-limiting example, a massage therapy program can be used to control the vibrating mechanism, where it increases and decreases the vibrating strength of the vibrating mechanism according to a particular massage therapy program.

In addition to controlling the electronic device 500, the processing unit can be used to monitor and control the biological functions of the user. For example, the processing unit can be connected to a temperature sensor (e.g., a thermometer, as illustrated in FIG. 17) to monitor the user's temperature. If the user's temperature falls outside a predetermined range of temperatures, the processing unit can turn on a heating or cooling system, as appropriate, to heat/cool the user. As can be appreciated by one skilled in the art, such a monitoring and control feature can also be used to monitor and control external conditions and devices, or other electronic devices, such as lights and a vibrator mechanism.

In yet another aspect, a computer controller chip 604 can be connected with the foot-therapy and toe-aligning device 100 itself. As was the case above, the chip 604 is electronically connected with the electronic device 500 and is used to control the electronic device 500. The chip 604 is connected with the foot-therapy and toe-aligning device 100 at any suitable location, non-limiting examples of which include being positioned within a post 112, being attached with the outer post surface 308, being positioned within an interior of the frame 102, being attached with the outer frame surface 300 of the frame 102, and being attached with a handle 312.

In another aspect, it may be desirable to apply a material (such as a lotion or medicinal cream) to the foot-therapy and toe-aligning device 100 for dispersal around a user's foot. As shown in FIG. 7, a port 700 is formed through at least one of the plurality of posts 112 and/or frame 102. The port 700 is formed in any suitable manner to allow a user to insert a material into the port 700 for dispersal proximate a user's

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toes. For example, the port 700 may have an inlet 702 formed in the handle 312, with an outlet 704 formed in the post 112 such that material inserted within the inlet 702 is dispersed to the user's toes at the outlet 704.

The material may be applied to the user's foot through a variety of techniques. For example, a reservoir 706 is formed in the foot-therapy and toe-aligning device 100 such that a user may position a material into the reservoir 706. The reservoir 706 is formed at any suitable location on the foot-therapy and toe-aligning device 100, non-limiting examples of which include being formed in the outer post surface 308, being formed in the outer frame surface 300, and being formed in the handle 312. The reservoir 706 is formed in any suitable shape to hold the material. For example, the reservoir 706 may be a simple divot, or may include ribs. The reservoir 706 can be used to hold materials externally to be delivered on or through the device 100, non-limiting examples of such materials include scented liquids, lotions, powders, and medicinal products (such as treatment products for athlete's foot).

In another aspect, any outer surface of the device 100 may include traction members (not shown) to increase the contact surface area of the area in which the traction members are formed. The traction members improve the traction characteristics between the device 100 and the user. For example, the traction members may be ribs, bumps, notches, etc., to cause the device to better grip another surface. By way of example, the posts include traction members to assist the post in affixing with an adjacent toe.

In another aspect, the foot-therapy and toe-aligning device 100 can be incorporated into footwear through a variety of techniques. As shown in FIG. 8, a piece of footwear 800 is attached with the frame 102. Alternatively, as shown in FIG. 9, the piece of footwear 800 can operate as the frame, with the posts 112 protruding from the piece of footwear 800.

In yet another aspect, the foot-therapy and toe-aligning device 100 can be incorporated into a shoe sole insert. As shown in FIG. 10, a shoe sole insert 1000 is attached with the frame 102, thereby allowing a user to place the foot-therapy and toe-aligning device 100 within a shoe and wear the shoe while treating the user's toes. Alternatively, as shown in FIG. 11, the shoe sole insert 1000 can operate as the frame, with posts 112 attached with and protruding from the shoe sole insert 1000. Another example of such a configuration would be an enlarged frame that includes a sufficient number of posts 112 for both feet (e.g., 8 posts) with the posts appropriately positioned to allow for placement of both feet upon the enlarged frame. In this aspect, the enlarged frame would act as a platform where both feet are held in place upon it using a combination of the platform and toe posts 112. Such an aspect would be beneficial, for example, for holding both feet in place during a foot bath.

As described above, the foot-therapy and toe-aligning device includes a plurality of posts attached with some form of a frame. However, the invention is not intended to be limited thereto and can include additional aspects, such as that shown in FIG. 12. FIG. 12 illustrates another aspect of the foot-therapy and toe-aligning device 1200. In this aspect, the foot-therapy and toe-aligning device 1200 comprises an elongated post 1202 formed of an elastomeric material. The elongated post 1202 has two opposing edges 1204 with handles 1206 attached at each of the two opposing edges 1204. The handles 1206 may be separately formed and attached with the elongated post 1202, or integrally formed as a single piece. A user may use the handles 1206 to stretch 1208 the elongated post 1202 and place the now stretched elongated post 1202 between two adjacent toes 1210. Upon release, the elasto-

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meric material of the post 1202 causes the post 1202 to conform its shape to fit snugly against the user's toes 1210.

FIG. 13 illustrates another aspect of the present invention where a sleeve 1300 is formed to fit over at least one of the toe posts 112. The sleeve 1300 is generally formed in any suitable shape to contain a toe post 112 therein. For example, the sleeve 1300 is generally cylindrical. Additionally, the sleeve can be formed of an elastomeric material so that it is expandable to conform to the shape of the post 112. The sleeve 1300 can be a continuous or split sleeve 1302. The split sleeve 1302 allows a user to open the sleeve for easy positioning over the post 112. The sleeve allows a user to customize the therapeutic action of the present invention and to deliver medication, cream, magnets, scent, etc. to a user's toes. For example, a user can insert a cream within the sleeve such that the cream is dispersed around the edges of the sleeve to a user's toes. The sleeve can also be formed to hold other devices (non-limiting examples of which include a vibrator or orthopedic pad for the ball of user's foot, etc.) to further treat and accommodate each individual's unique biometric characteristics. In another aspect, the sleeve itself can operate as a medicinal delivery mechanism for delivering a medication to a user. As a non-limiting example of such a mechanism, the sleeve can include the medications typically used in a non-smoking transdermal patch. Alternatively, the sleeve can operate as a base for placement of other medicinal systems. As a non-limiting example, the sleeve is formed to operate as a base for placement of an adhesive non-smoking transdermal patch upon the sleeve, thereby allowing for medical benefits.

It should be noted that the various medicinal delivery systems (reservoir, port, sleeve, etc.) described herein are not limited to the posts and can be formed and applied at any desirable portion of the device, such as within the holes, along the base, or at any other portion of the device. Thus, using the present invention, a user can wear the device while simultaneously applying a myriad of creams, lotions, powders, medicines, etc.

When disposable, such a disposable post cover would allow multiple people to use the present invention without fear of cross-contamination from other users. Additionally, the sleeve 1300 can be used to hold and transport a product to the toes, non-limiting examples of such a product include an anti-fungal cream, an anti-bacterial agent, and/or a moisturizing material. In another aspect, the sleeve 1300 itself can be impregnated with the product.

FIG. 14 illustrates another aspect of the present invention. A support structure 1400 can be disposed within the toe posts 112 to provide the toe posts 112 with a rigid (or bendable/articulating) support. The support structure 1400 is any suitable rigid material, non-limiting examples of which include a metal rod and a plastic rod. The support structure 1400 can be disposed within the toe posts 112 individually such that they are not interconnected, or they can be connected through attachment with the rigid material shown in FIG. 4.

Another aspect of a foot-therapy and toe-aligning device 1500 according to the present invention is shown in FIG. 15. The foot-therapy and toe-aligning device 1500 comprises a frame 1502 with a separator 1503 for separating a plurality of toes. The frame 1502 may be constructed of any suitable material, non-limiting examples of which include plastic, silicone, and cork. Additionally, the frame 1502 may be optionally inflatable or filled with a fluid. When inflatable, the frame 1502 may be inflatable to various pressures. Furthermore, the frame 1502 may be formed through any suitable means for forming a frame 1502, non-limiting examples of which include injection molding, cast molding, compression

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molding, and extrusion molding. The frame 1502 has a top portion 1504, a bottom portion 1506, a front portion 1508, and a back portion 1510.

Included in the frame 1502 are a plurality of holes 1514, each configured for insertion of a toe. Each hole has an entrance on the back portion 1510, an exit on the front portion 1508, and surrounding walls 1516. The surrounding walls 1516 may be flat, curved or any other suitable shape to accommodate a toe. Additionally, the surrounding walls 1516 in at least one hole of the plurality of holes 1514 is continuous and thereby sealed, serving as a sealed toe hole 1518. Additionally, the surrounding walls 1516 in at least one other hole in the plurality of holes 1514 is non-continuous and thereby not sealed, serving as an openable toe hole 1520 allowing for easy insertion of a corresponding toe or toes.

The openable toe hole 1520 may be sealed through use of an enclosure 1522. Furthermore, the enclosure 1522 may be any suitable device or mechanism for attaching one medium with another, non-limiting examples of which include Velcro, snaps, an elastic band, hole and pin, and a male/female joint system.

A foot-therapy and toe-aligning device 1500 with toes 1600 inserted therein, is illustrated in FIG. 16. Although at least one hole in the plurality of holes 1514 serves as a sealed toe hole 1518, at least one other hole in the plurality of holes 1514 is not sealed and serves as an openable toe hole 1520. Because the openable toe hole 1520 is not sealed, the foot-therapy and toe-aligning device 1500 may be easily distorted and manipulated to allow easy insertion as well as articulation and accommodation of toes 1600 therein. The significance of the openable toe hole 1520 is that without the openable toe hole 1520, the toe stretcher is not easily manipulated, thereby making it difficult to utilize existing toe stretchers.

The foot-therapy, exercise, and toe aligning device 1500 teaches specific combinations of one or more closed and openable toe holes that provides for a superior balance of convenience for placing and securing the device on the toes. These specific combinations also provide for superior therapeutic and exercise benefits for people with variations in foot and toe structure, foot conditioning, and pathology. The size, shape, and location of the toe hole openings provides unique and unanticipated benefits for people with varying foot and toe structures, conditions and pathology.

There are unique and novel advantages in the accommodation of toe movement/articulation, in passive and active use of the device 1500 that result from combinations of openable and closed toe openings. For example, a completely closed toe opening limits the amount of freedom (articulation) of movement that is available to the toes and feet. Under many circumstances, such as stiff toes and pathologic foot conditions (i.e., bunions, hammer toes, cross toes, etc.), a specific combination of closed and openable toe hole openings yields a more convenient and superior exercise and therapeutic result.

It should be noted that the configuration of the foot-therapy and toe-aligning device 1500 illustrated in FIGS. 15 through 19 can include each of the devices and elements that are attached to or within the frame (and posts) as described and illustrated in FIGS. 1 through 14. For example and as can be appreciated by one skilled in the art, the reservoir, electronic devices, processing units, etc., can also be attached with (or within, as applicable) the frame 1502 of FIG. 15 to provide an equivalent function to the user. It should also be noted that the mechanisms, elements, and devices described and illustrated with respect to FIGS. 17 through 19 can also be attached with and used with the foot-therapy and toe-aligning device 100 that is illustrated in FIGS. 1 through 14.

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As shown in FIG. 17, the foot-therapy and toe-aligning device **1500** can also include a variety of implantation elements. In addition to the electronic devices described above, the implantation element is any suitable element that can be implanted, either fully or partially, within the foot-therapy and toe-aligning device **1500**. Although illustrated as being fully implanted at various locations within the foot-therapy and toe-aligning device **1500**, the present invention is not intended to be limited thereto as the implantation elements, nor their implantation depths, can be affixed within the device **1500** at any desired location and at any desired implantation depth.

The implantation element can be used to provide a variety of cosmetic, ornamental, entertainment, therapeutic, and educational benefits. As a non-limiting example, the implantation element is a light or a series of lights **1700**. The lights **1700** can be used for a variety of purposes, non-limiting examples of which include light therapy and messaging. For example, the lights **1700** can be used for light therapy, where the light being emitted is within a range of the light spectrum (e.g., infrared) that provides a therapeutic benefit to the user.

As another example, the lights **1700** can be used as a messaging system. If the lights are used as a light messaging system (such as a light emitting diode (LED) system), the lights **1700** can be used to generate a variety of messages for entertainment, educational, ornamental, and advertisement purposes. In another aspect, the implantation element can be a display device **1702** that is used to display a variety of messages. As a non-limiting example, the display device **1702** can be a plastic disk (or any other suitable shape) that includes logos of recognizable sports teams, groups, companies, events, etc. (e.g., Coca-Cola™, Detroit Red Wings™, Beverly Hills Hotel™, etc.). As described above, the foot-therapy and toe-aligning device **1500** can be formed of a transparent material (e.g., a clear or colorless elastomeric gel or other transparent material). It should be noted that the device **1500** can also be formed of translucent tents with color that allow for light to pass therethrough. Thus, when the display device **1702** is inserted within the foot-therapy and toe-aligning device **1500**, a user can easily see and read any messages imprinted upon or otherwise displayed by the display device **1702**.

Another non-limiting example of an implantation element is a thermometer **1704** or other suitable sensing device. As described above, the thermometer **1704** (or other sensing device) can be used to monitor and control the biological functions of the user to provide for therapeutic benefits.

As yet another non-limiting example, the implantation element can be a magnet **1706** or several magnets. As can be appreciated by one skilled in the art, the magnet **1706** can be used to provide a therapeutic benefit to the user. In another aspect, the magnet **1706** can be used to attach an external object with the device **1500** and thereby operate as an attachment mechanism.

As shown in FIG. 18, the present invention also includes an attachment mechanism that is attached with the frame **1502**. The attachment mechanism is any suitable mechanism or device that is operable for detachably attaching an external object **1800** with the device **1500**. Non-limiting examples of such attachment mechanisms include a magnet **1706** system, a clip mechanism **1802**, a male/female plug mechanism **1804**, and a hook and loop fastener (e.g. Velcro) **1806**. The external object **1800** is any suitable object that is desirable for connecting with the device **1500**. For example, each of the electronic devices and implantation elements as described above can be attached with the device **1500** as an external object **1800**. As yet a further example, the display device (illustrated

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as element **1702** in FIG. 17) can be affixed externally as an external object **1800** instead of being implanted within the device **1502**.

As described above with respect to FIG. 14, the present invention also includes a support structure **1400**, either pre-formed or formable. Although FIG. 14 illustrates the support structure **1400** as being inserted within only the toe posts **112**, the present invention is not intended to be limited thereto. As shown in FIG. 19, the support structure **1900** can be formed throughout (and within) the device **1500** to allow a user to customize the shape of the device **1500**. In this aspect, the support structure **1900** is malleable or bendable such that it operates as a formable armature. The support structure **1900** is formed of any suitably re-shapeable material that maintains a new shape once positioned in the new shape, a non-limiting example of which includes metallic wire. Thus, using the support structure **1900**, a user can alter the shape of the device **1500** to increase comfort, etc.

In summary, the present invention is an exercise foot-therapy and toe-aligning device that is formed to include a myriad of features. Examples of such features include educational benefits, therapeutic effects, advertisement opportunities, etc. Such features are provided using a variety of devices and implementations (e.g., implantation elements, electronic devices, external objects, reservoir, support structure, etc.) that can be used with each of the aspects illustrated in FIGS. 1 through 19.

What is claimed is:

1. A foot-therapy and toe-aligning device, comprising:
a frame, the frame including a top portion;
a plurality of posts formed of an elastic material extending
from the top portion of the frame, whereby a user may
place at least one of the plurality of posts between a
user's toes;
wherein the posts have a length, a diameter, and a circum-
ference, and wherein the posts have elastic properties;
and
wherein each of the plurality of posts has an outer edge and
further comprises a handle attached with the outer edge.
2. A foot-therapy and toe-aligning device as set forth in
claim 1, wherein the handles include an attachment mech-
anism, allowing user to connect the handles using a connector
that connects with the attachment mechanism.
3. A foot-therapy and toe-aligning device as set forth in
claim 2, wherein the attachment mechanism includes holes
formed through the plurality of handles such that a user can
connect the handles by using a connector that passes through
the holes.
4. A foot-therapy and toe-aligning device as set forth in
claim 3, wherein the elastic material is an elastomer gel.
5. A foot-therapy and toe-aligning device as set forth in
claim 4, wherein the frame is formed of an elastic material.
6. A foot-therapy and toe-aligning device as set forth in
claim 5, wherein the handle is formed as a ring to allow a user
to grasp the ring and stretch a post.

7. A foot-therapy and toe-aligning device as set forth in
claim 6, wherein each of the plurality of posts has a length, an
outer post surface, and a center post axis running the post
length, and wherein the elastic material in the post has a
density, with the density varying from the outer post surface
to the center post axis.

8. A foot-therapy and toe-aligning device as set forth in
claim 7, wherein the frame has an outer frame surface, a frame
length, and a center frame-axis running the frame length, and
wherein the elastic material in the frame has a density, with
the density varying from the outer frame surface to the center
frame-axis.

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9. A foot-therapy and toe-aligning device, comprising:
a frame, the frame including a top portion;
a plurality of posts formed of an elastic material extending
from the top portion of the frame, whereby a user may
place at least one of the plurality of posts between a
user's toes; and
further comprising an electronic device attached with the
foot-therapy and toe-aligning device.

10. A foot-therapy and toe-aligning device as set forth in
claim 9, wherein the electronic device is a device selected
from a group consisting of a vibrating system for massaging
and stimulating a user's toes, a light system, a heating system,
a sensor, a cooling system, and a pulsating pressure mecha-
nism.

11. A foot-therapy and toe-aligning device as set forth in 15
claim 9, further comprising a motion sensor connected with
an electronic device for actuating the electronic device.

12. A foot-therapy and toe-aligning device as set forth in
claim 9, further comprising a remote control connected with
the electronic device for allowing a user to selectively control 20
the electronic device.

13. A foot-therapy and toe-aligning device as set forth in
claim 9, wherein the electronic device is controlled by a
processing unit.

14. A foot-therapy and toe-aligning device as set forth in 25
claim 13, further comprising a controller chip connected with
the foot-therapy and toe-aligning device.

15. A foot-therapy and toe-aligning device as set forth in
claim 10, wherein the sensor is configured to provide feed-
back to a user when a predetermined threshold is reached.

16. A foot-therapy and toe-aligning device as set forth in
claim 15, wherein the feedback is provided in a manner
selected from a group consisting of at least one of light,
sound, vibration, and a change in temperature.

17. A foot-therapy and toe-aligning device as set forth in 35
claim 1 further comprising an electronic device attached with
the handle.

18. A foot-therapy and toe-aligning device as set forth in
claim 1, wherein the frame has an outer frame surface, a frame
length, and a center frame-axis running the frame length, and
where each of the plurality of posts has a length, an outer post
surface, and a center post axis running the post length, and
further comprising a magnet attached with the foot-therapy
and toe-aligning device, where the magnet is attached with
the foot-therapy and toe-aligning device in a manner selected
from a group consisting of being positioned within a post,
being attached with the outer post surface of the post, being
positioned within an interior of the frame, being attached with
the outer frame surface of the frame.

19. A foot-therapy and toe-aligning device as set forth in 50
claim 1, wherein each of the plurality of posts has an exposed
outer edge and further comprises a plurality of handles con-
nected with the outer edge of each of the plurality of posts,
where a handle is connected with an outer edge, and further
comprising a magnet attached with the handle.

20. A foot-therapy and toe-aligning device as set forth in
claim 1, further comprising a port formed through at least one
of the plurality of posts and/or frame, the port being formed to
allow a user to insert a material into the port for dispersal
proximate to a user's toes.

21. A foot-therapy and toe-aligning device as set forth in
claim 1, wherein the frame has an outer frame surface and
where each of the plurality of posts has an outer post surface,
and further comprising a reservoir formed in at least one of
the following: the outer post surface and the outer frame
surface, whereby a user may position a material into the
reservoir.

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22. A foot-therapy and toe-aligning device as set forth in
claim 1, wherein each of the plurality of posts has an exposed
outer edge and further comprises a plurality of handles con-
nected with the outer edge of each of the plurality of posts,
where a single handle is connected with a single outer edge,
and further comprising a reservoir formed in the handle.

23. A foot-therapy and toe-aligning device as set forth in
claim 1, further comprising a footwear attached with the
frame.

24. A foot-therapy and toe-aligning device, comprising:
a frame, the frame including a top portion;
a plurality of posts formed of an elastic material extending
from the top portion of the frame, whereby a user may
place at least one of the plurality of posts between a
user's toes; and
wherein the frame is formed as a shoe sole insert, thereby
allowing a user to place the foot-therapy and toe-align-
ing device within a shoe and wear the shoe while treating
the user's toes.

25. A foot-therapy and toe-aligning device as set forth in
claim 1, further comprising a shoe sole insert attached with
the frame, thereby allowing a user to place the foot-therapy
and toe-aligning device within a shoe and wear the shoe while
treating the user's toes.

26. A foot-therapy and toe-aligning device as set forth in
claim 1, wherein each handle is integrally formed with its
corresponding post as a single piece.

27. A foot-therapy and toe-aligning device as set forth in
30 claim 1, wherein each of the plurality of posts has a length, an
outer post surface, and a center post axis running the post
length, and wherein the elastic material in the post has a
density, with the density varying from the outer, post surface
to the center post axis.

28. A foot-therapy and toe-aligning device as set forth in
claim 1, wherein the frame is formed of an elastic material and
the frame has an outer frame surface, a frame length, and a
center frame-axis running the frame length, and wherein the
elastic material in the frame has a density, with the density
varying from the outer frame surface to the center frame-axis.

29. A foot-therapy and toe-aligning device as set forth in
claim 1, further comprising a sleeve for positioning over a toe
post.

30. A foot-therapy and toe-aligning device as set forth in
45 claim 1, further comprising a support structure disposed
within the toe post.

31. A foot-therapy and toe-aligning device, comprising:
a frame, the frame including a top portion;
a plurality of posts formed of an elastic material extending
from the top portion of the frame, whereby a user may
place at least one of the plurality of posts between a
user's toes; and
wherein the device is formed of a material that allows light
to pass through the material.

32. A foot-therapy and toe-aligning device as set forth in
claim 1, further comprising an implantation element inserted
within the frame.

33. A foot-therapy and toe-aligning device for stretching a
user's toes, the foot-therapy and toe-aligning device compris-
ing:

an elongated post formed of an elastic material, the elon-
gated post having two opposing edges, whereby a user
may use the two opposing edges to stretch the elongated
post and place the now stretched elongated post between
two adjacent toes, and where upon release, the elastic
material of the post causes the post to conform its shape
to fit snugly against the user's toes: and

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further comprising handles attached at each of the two opposing edges, whereby a user may use the handles to stretch the elongated post.

34. A foot-therapy and toe-aligning device as set forth in claim **33**, wherein the handles are integrally formed with the elongated post as a single piece.

35. A foot-therapy and toe-aligning device, comprising: a frame with four separators for separating a plurality of toes, wherein the frame comprises a top portion, a bottom portion, a front portion, and a back portion, with the separators connecting the top portion with the bottom portion;

wherein the separators, in combination with the top portion and the bottom portion, form three holes through the frame for insertion of a plurality of toes, wherein each

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hole includes an entrance into the back portion, an exit from the front portion, and surrounding walls connecting the entrance with the exit;

wherein the four separators include two outer separators and two inner separators, such that each of the two outer separators include an inner portion that forms a surrounding wall in a corresponding hole and an outer portion that does not operate as a surrounding wall to a hole; and

wherein at least one of the top portion and the bottom portion includes at least one elongated section that extends beyond the outer portion of at least one of the two outer separators.

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